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#### Recommended Citation

"IJSAP Volume 02, Number 01" (1981). *IJSAP VOL 2. 1.*  
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JANUARY/FEBRUARY 1981

# International Journal for the Study of Animal Problems

VOLUME 2 NUMBER 1



# International Journal

for the Study of  
Animal Problems

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## SUBSCRIPTION INFORMATION:

One volume published bimonthly  
— six 64-page issues  
Annual subscription:  
Individual — \$25; Institution — \$45;  
Student — \$17.50  
Make check payable in U.S. funds on U.S.  
bank to "HSUS for ISAP."  
Send orders to: Journal Department,  
Institute for the Study of Animal Problems,  
2100 L St., N.W., Washington, D.C. 20037 USA.

## PUBLISHED BY

The Institute for the Study of Animal Problems  
2100 L St. NW  
Washington, D.C. 20037

ISSN:0195-7554  
Second-class postage paid at Washington, D.C.

Articles published in the *Journal* do not necessarily  
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## LETTERS TO THE EDITOR

### *How Effective is USDA?*

The History and Development of the Federal Animal Welfare Regulations (*Int J Stud Anim Prob* 1(5):287-295, 1980) ignores the two fundamental realities of the Animal Welfare and Horse Protection Acts, namely the strong opposition of the U.S. Department of Agriculture to the original enactment and subsequent amendments to these laws and the past failure of USDA to effectively conduct its administration and enforcement responsibilities. It is regrettable that Dr. Chaloux and Mr. Heppner have not presented the entire picture.

Before elaborating on these points, I would like to commend several USDA officials who have now recognized the past errors and are trying to take remedial action. It would be beneficial to USDA to take a hard look at the past and learn from it, rather than attempting to ignore it.

The article by Dr. Chaloux and Mr. Heppner fails to describe accurately the dynamic forces at work during the legislative debate. The article reduces to a simplistic level what in reality was a series of controversies involving several congressmen and senators, animal welfare organizations, the government and the potentially regulated parties. Dr. Chaloux and Mr. Heppner failed to note that the USDA officially opposed the Act and its subsequent amendments. Nor do they mention the conflict that broke out among the animal welfare organizations over the approach to legislation. There was strong support to enact legislation on the British model, but it was counteracted by the more palatable regulatory approach that is currently in operation. The political history of these laws has yet to be written, and it is unfortunate that the article fails to make a con-

tribution to that end.

Beyond the weakness in content and historical analysis, a far more serious deficiency is the apparent lack of recognition of the severe internal problems confounding acceptable enforcement of these programs. The data furnished detailing the fines levied and the number of licenses suspended is not presented within the total context of what should be happening in this area. To those familiar with the program, the data shows only that enforcement efforts have been too little, and in many instances, too late to alleviate animal suffering.

As the Animal Welfare Act Coordinator for the Humane Society of the United States, I monitor enforcement of these programs and find a disturbingly high incidence of noncompliance with the Act by many of the regulated parties. Our office deals repeatedly with situations in which USDA employees have failed to remedy violations of the Act. This phenomenon is largely due to an apathetic attitude and lackadaisical approach on the part of many USDA employees.

For example, in one southern state, there is a roadside menagerie in which deplorable conditions have been tolerated by the USDA for years. The USDA has failed to take corrective action, and one USDA employee even went as far as writing to the owner to tell him that the humane societies can't take any action against him. There are scores of similar situations in roadside zoos throughout the United States.

There is also widespread animal abuse in the pet factories and among laboratory animal dealers that continues to go uncorrected. A recent expose of the notorious puppy mills in Missouri revealed that half of the facilities checked were in violation of the Animal Welfare Act standards. Furthermore, evidence of pet theft by unscrupulous laboratory animal dealers has never been fully investigated by the USDA. Neither has there been

meaningful oversight by USDA of the requirement that analgesics be used in painful research except when they would interfere with the results.

With respect to the Horse Protection Act, the law that prohibits the "soring" of the horses' legs to exaggerate the high-stepping gait is not being adequately enforced. The self-regulation scheme instituted by the USDA seems to work only when a USDA employee is looking over the shoulder of the industry's designated checkers.

USDA's poor record comes from three interrelated factors: money, manpower and apathy. The program has never been funded adequately. The responsibility for this belongs to both the executive branch and to Congress. From August 15 to October 1, 1980, the program had to be completely shut down because the agency ran out of money. This was partly due to the mismanagement and partly to the lack of sufficient funds.

There is an unfortunate perception that animal welfare detracts from the "more important" area of livestock diseases. This attitude has had an influence on the appropriations issue and has been manifested in the program right down the line. Many of the employees charged with animal care duties are livestock inspectors whose only qualifications are that they lived on a farm for three years. While this may be adequate for brucellosis testing, it does not guarantee that the person will be qualified to enforce the Animal Welfare and Horse Protection Acts. Their work is frequently shoddy and incomplete and has bordered on malfeasance. Therefore it comes as no surprise that the regulated parties feel little pressure to comply with these laws.

Contrary to the bland statements of Dr. Chaloux and Mr. Heppner, there are important problems facing the animal care program at the USDA. Failure to acknowledge past limitations may create an incorrect

assumption that the program is working reasonably well. To solve the problems facing the program will require imagination and dedication. I am pleased that there is a strong sense of dedication in many USDA officials and employees and that there is now movement in the direction of finding solutions.

Margaret G. Morrison  
Animal Welfare Act Coordinator  
Humane Society of the U.S.  
2100 L St. NW  
Washington, DC 20037  
2 October 1980

### *The Authors Respond*

Ms. Morrison wrote a thoughtful response to our article on animal welfare regulations. She has worked hard for animal rights and we know she gets frustrated at times in trying to use federal programs to accomplish her aims. We are unlikely to please all parties interested in animal care and handling because of the conflicting points of view involved. We stated that in our article and Ms. Morrison helps us make that point.

We would like to clarify one issue Ms. Morrison raises, namely that the U.S. Department of Agriculture spoke out in opposition to animal protective legislation when it first was proposed in Congress. Our opposition to the bills was directed at *who* would carry out enforcement, not at the principle of humane care and treatment for animals.

The Agriculture Department was proposed as the agency to enforce animal welfare laws because we work with animals and employ a large number of veterinarians. However, in 1966, when the original legislation on laboratory animals was proposed, these veterinarians had little or no expertise in this area. Similarly, in 1976, when amendments were proposed on animal fighting ventures, the Department's opposition was due

only to the fact that it was ill-equipped to combat the elements of organized crime involved in dogfighting exhibitions. In both instances, the Department suggested that other agencies of government should enforce the proposed legislation.

Nevertheless, Congress decided that Agriculture should take on animal welfare enforcement, despite our lack of specific preparation for the job. Federal government came into animal welfare regulation because efforts by private, local, and state agencies failed to achieve the desired results—even after decades of trying to solve major animal welfare problems. In the 14 years since the original law was passed, animal rights have been enforced better than in any previous period.

We don't claim perfection. Much remains to be done. But with the expertise and training we have been able to assemble so far, we have been instrumental in seeing that laboratory animals get more humane handling and treatment. Administrators of research institutions are more aware than ever before of their responsibilities toward the animals they use. Similarly, transportation and handling of animals traveling by air has improved. The flimsy crates of past years have disappeared and crass inattention to animal cargo has become rare. And although continued improvement in the care of show horses is necessary, Tennessee Walking Horses no longer perform with feet bleeding in the show ring, something that happened frequently before federal regulation began.

Our point is that we have made considerable progress—although there is no doubt that major problems remain uncorrected and that our inspectors need further training.

Ms. Morrison refers to an "apathy" problem, which we recognize has existed in some of our employees. At the same time, most are

dedicated to this important program and do an excellent job with the resources at hand. We intend to learn from our shortcomings and pursue the remaining problems and provide the needed training as speedily as possible.

We are heartened by the humane consciousness that is developing in our society. We are dedicated to fostering this consciousness within our agency, with the people we license and inspect, and with other animal-using organizations.

Pierre A. Chaloux  
Max B. Heppner  
USDA-APHIS  
Washington, DC 20250  
12 November 1980

# EDITORIAL

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## The Leopard in Africa: Biological and Cultural Realities

Norman Myers, Editorial Advisory Board

The leopard in Africa may once again come under pressure from the U.S. Fish and Wildlife Service, which is considering the prospect of changing the leopard's legal status from endangered to threatened, thus opening it up to sport hunting. The motivation is to enable American hunters to bring leopard skin trophies back to the United States.

In my opinion, this would be a mistaken move at the present time. I offer this opinion on the basis of 23 years residence in Africa, during which time I have visited 44 countries in the region south of the Sahara, many of them repeatedly. In the early 1970s, I conducted a two-year survey for the International Union for the Conservation of Nature (IUCN) and the World Wildlife Fund (WWF) to assess the status of the leopard (also the cheetah) throughout its range in sub-Saharan Africa. My 1975 report to IUCN and WWF proposed, among its recommendations, that when a proper time arrived, the leopard could become available for exploitation not only through sport hunting but also through sustained cropping for the fur trade and for other purposes that would entail utilizing the leopard's pelt as a high-value trophy. For institutional rather than biological reasons, however, I believed in 1975 and I still believe that a "proper time" has not yet arrived.

True, the leopard's biological status is not as bad as that of most wildlife species in Africa. A highly resourceful and secretive creature, the leopard is rarely seen, yet it retains "satisfactory" numbers in at least one dozen countries—"satisfactory" in comparison to other species such as the lion, the cheetah and the crocodile. Of course the leopard's numbers are often poor if not appalling compared with what they could be through systematic and comprehensive safeguards, notably with respect to illegal hunting of the leopard for its skin and widespread poisoning of the animal as a livestock protection measure. The leopard is still *relatively* numerous in the rainforest countries of equatorial Africa (Zaire, Congo and Gabon). It also retains moderate numbers, *i.e.*, it is still far from being eliminated (though declining, sometimes fast), in Tanzania, southern Sudan, Zambia, Cameroon, Botswana and possibly Mozambique. In several other countries (Kenya, western forest of Ethiopia, Central African Republic and possibly Angola), the leopard is still years away from "disaster status", though its numbers are a mere fraction of what they were in 1960 and continue to decline rapidly. As a result of exceptional and progressively severe pressures during the last two decades, the leopard has been all but extirpated in virtually all other countries included in its range.

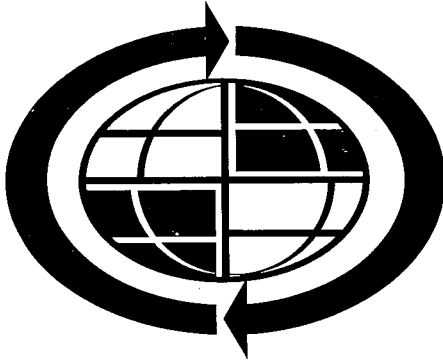
To be sure, a few individuals still hang on here and there; the leopard is more resilient and persistent and adaptable than almost all other major kinds of wildlife, and leopard are still occasionally to be encountered in the city limits of Nairobi. But "conservation" speaks of a different sort of status, and "survival outlook" surely goes beyond a few relic animals that somehow survive in odd corners. It is therefore grossly incorrect, even within narrowly conceived limits, to state, as did an article in *Science* dated 18 April 1980, that the leopard exists with populations that are "large" by any significant measure in all countries ex-



cept Somalia. In my considered opinion, and in a professional "wildlife management" sense of term, the leopard's populations are *not* "large" in three quarters of the the countries in question. Furthermore, the leopard's numbers are fast dwindling: If we can judge by the experience of South Africa, it is possible through the use of poison as a livestock protection method to eliminate the leopard from broad stretches of territory in just a few years. Several countries, especially the beef-producing countries of Botswana, Kenya and Zimbabwe, are increasingly utilizing poison to get rid of wild predators in livestock areas.

The main problem, however, with U.S. Fish and Wildlife's proposal is not really the species' biological status. After all, sport hunting would take off no more than a few hundred animals each year, which, when spread across several countries, would be of trifling biological consequence. The main problem is institutional, socio-cultural and economic. Wildlife agencies in emergent Africa are not yet capable, even if inclined, to regulate wildlife resources in a sufficiently effective manner. Corruption is rife in many if not most countries in question. If the door to exploitation is opened an inch, e.g., for sport hunters, a flood gate may burst open, admitting all manner of illicit activities. No matter how well-intentioned the hunting fraternity may be (and they often proclaim that they are no worse and no better than humanity at large), it is naive to suppose that wildlife management measures that might work in the United States could somehow be made to work in developing Africa, where an illegal leopard skin can more than double one month's salary for a wildlife manager or a customs official, and match a whole year's cash income for a game scout or a subsistence peasant. It is not true that sport hunting of the leopard would assist rural communities and thereby foster a favorable attitude toward the leopard; most of the hunter's dollar goes into the pocket of the safari company that he engages and the bank accounts of hotels, game lodges and other large entrepreneurs. In a handful of areas, a portion of license fees, etc. are allocated to local "district councils", and the funds can then be used to build schools and the like, but that is altogether different from saying that the hunter's expenditures accrue to the peasant whose sheep and calves may be taken by leopards. If a peasant loses livestock worth \$100, he does not feel compensated by receiving a share of a dispensary built through hunters' fees. The key factor is an acceptable apportionment of costs and benefits, as perceived by the man with a calf and with a spear to defend his calf.

Conservation of all wildlife throughout Africa faces enough problems without the further complications that would undoubtedly arise from sport hunting of the leopard within the foreseeable future. The issue encompasses more than the leopard's biological status and more than a single species. It reflects a host of questions that relate directly to the survival of wildlife in general. Well-meaning individuals in the United States may wish to view the situation in a narrower perspective, and within a context of their experience of wildlife management in developed parts of the world. However, to consider the "leopard question" in these terms is simplistic, taking next to no account of the principal determining factors of wildlife conservation in Africa, these factors being cultural, social, economic, institutional, and ultimately, political. American sportsmen can suggest to African political leaders that they know what is best for African wildlife, but they do it at the potential cost of not appearing to understand the nature, not to mention the size, of the problem.



## COMPANION ANIMALS

### *Control of Spraying and Urine Marking in Cats*

B.L. Hart, in a paper entitled "Objectionable Urine Spraying and Urine Marking in Cats: Evaluation of Progestin Treatment in Gonadectomized Males and Females (*JAVMA* 177:529-533, 1980) gives a synopsis of hormone therapies for these troublesome behavior patterns which often lead to owners having their cats destroyed. Hart compared two long-acting progestins, injectable medroxyprogesterone acetate (MPA) and oral megestrol acetate (MA). He found that both drugs were successful overall in approximately one third of his subjects. More favorable responses were obtained from males (48%) than from females (13%) and from cats in single-cat homes (50%) than cats in multi-cat homes (18%).

The author concluded that because of side effects such as increased appetite and depression, MA should be used only if initial treatment with MPA proves ineffective. (Dose recommendation: MA 5 mgm/cat/day for 7-10 days and if response is favorable in 7 days, reduce to 5 mgm every 2nd day for two weeks, then 5 mgm twice weekly for four weeks and then 5 mgm/week for 2-6

months. The dose of MPA is just one subcutaneous injection of 10-20 mgm/Kg.

## LAB ANIMALS

### *Baboons Care for Cats*

Amid all the furor over whether apes have language, it appears that nonhuman primates may have another trait thought to be uniquely human, namely, that of keeping pets. Observations to date of guardian and maternal behavior in pongids toward other species have involved human-reared apes, a factor which may link the observed behavior to the influence of human socialization. However, A.M. Coelho Jr. has recently reported "spontaneous adoptions of feral-living felines and expressions of guardian behavior" in a confined, laboratory colony of wild-born baboons that have remained essentially unsocialized to humans (*Lab Prim Newslett* 19(3):1-10, 1980).

Feral cats living on the grounds of the Southwest Foundation for Research and Education in San Antonio, Texas habitually approach baboon cages after the human work day ends to eat discarded baboon chow. In contrast to their total avoidance of human contact, these cats easily tolerate being touched as they feed by baboons reaching through their cages.

On one occasion, a small cat which managed to enter a baboon cage by squeezing through a hole in the chain link fence was approached and picked up by a mature female baboon. Although the human observers expected the baboon to treat the juvenile cat as prey, she instead began to groom the animal. All of her subsequent actions toward the cat were maternal and protective. An hour later, when the human observers attempted to remove the cat from the cage, the entire baboon group, including an adult male, responded de-

fensively. When the cat was finally removed (the group had to be taken from the cage and the female baboon sedated in order to loosen her grasp on the cat), it hissed at and scratched the human handlers, behavior which was not seen when the baboon was handling the animal.

A second cat, actually a kitten of approximately 3 months, entered this same cage several months later and was promptly adopted by the same female. The kitten remained with the baboons for two months, during which time it received maternal care from the female and became in all respects an accepted member of the entire group.

The author offers some intriguing possible explanations for the baboons' guardian behavior toward the cats. The female baboon in question is a healthy adult who has never reared an infant of her own; it is therefore possible that the kittens served as surrogate children, enabling her to practice her role as nurturer and help ensure her future competence as a parent. Another speculation is that the female baboon used these cats, whose physical appearance matched a set of generalized infantile characteristics which may elicit a protective response in adults, as a facilitator and catalyst in social interactions. For example, in situations where aggression threatened to escalate within the group, the adult male tended to assist the adoptive mother over those females without infants of any kind. The protective behavior of the adult male was particularly interesting from the point of view of evolutionary biology since he had no genetic investment in the cats and yet was prepared to defend them at the risk of personal injury.

These same reasons (surrogate child, facilitator of social interactions) have been given for human beings acting in a protective fashion toward a non-conspecific, otherwise known as a pet.

### **Abstract: *Animals Indispensable in Research***

Scientists engaged in drug research and development utilize very large numbers of experimental animals in their daily work. The present paper describes the various stages of pharmaceutical research in which animals are used to characterize the biological activities of drugs and to measure their toxic effects. Modern toxicity testing techniques, especially, require great numbers of animals, and certain animal tests are explicitly demanded by law and/or by drug regulatory authorities.

Whereas for a given research discipline or a specific animal model of disease the choice of the species is limited, the overall utilization of experimental animals is quantitatively clearly concentrated on small rodents, i.e. rats and mice. Modern drug research depends upon sophisticated animal breeding and production techniques which have to be carried out in conformity with internationally accepted guidelines, provided by the Universities Federation for Animal Welfare, and according to the letter of the law established for the protection of animals. Research, and especially biomedical and drug research, will in the future also depend upon experimental animals, although all attempts to limit animal experiments to the essential minimum should be encouraged. — **H. Bruhin & J. Gelzer** (Abstract reprinted from *Anim Regul Stud* 2: 283-295, 1980. Authors' address: Pharmaceuticals Division, CIBA — Geigy, Basel, Switzerland.)

## **FARM ANIMALS**

### **Abstract: *Housing Systems and Animal Welfare Research***

In assessing the welfare of farm livestock, ethological considerations must go beyond merely assessing the

physical state of the animal. Various methods of assessment, currently used, are discussed in this light. They include production records, self-choice experiments, the incidence of stereotypies, displacement activities and other responses to frustration, the incidence of agonistic behavior and distress behavior. All appear to have shortcomings and only by combining as many as possible together with all the known ethological data for the particular species can an adequate assessment be approximated and even then it should also include a survey of the physical state of animals in the housing systems under consideration. — **D.G.M. Wood-Gush** (Abstract reprinted from *Anim Regul Stud* 2: 275-281, 1980. Author's address: School of Agriculture, University of Edinburgh, West Mains Rd., Edinburgh, EH9 3JG, Scotland.)

#### *Industry Committee on Animal Welfare*

The U.S. Animal Health Association's Committee on Animal Welfare, under the chairmanship of E. Mickey Stewart, State of Nebraska Department of Agriculture, voted unanimously on November 4, 1980 at their annual meeting in Louisville, Kentucky to establish an interdisciplinary committee on farm animal welfare. Composed of representatives from humane, animal science, veterinary and livestock organizations, the committee will evaluate the projected Council for Agriculture, Science and Technology (CAST) task force report on farm animal welfare, establish a hierarchy of priorities and seek funds for applied research on selected welfare issues.

The CAST task force was recently established following congressional letters of concern to the Council, and is under the chairmanship of Dr. Frank Baker, Office of International Programs, Oklahoma State University, Enid, OK 73701.

#### *BVA Policy on Poultry Welfare*

The Council of the British Veterinary Association (BVA) has drawn up and approved a revised policy statement on the welfare of poultry in intensive systems (*Vet Rec* 107:43, 1980). The statement reviews the recent legal history of farm animal welfare in the UK and notes the BVA's contribution to the Farm Animal Welfare Council's reformulation of the 1968 Codes of Practice for domestic fowl.

The BVA recommends that government agricultural departments enable the State Veterinary Service to make more use of its statutory powers to visit farms for welfare monitoring and that state veterinary officers be fully aware of industry developments which could adversely affect poultry welfare.

The BVA policy also states that it should be mandatory for essential automated equipment to be fitted with alarm systems and/or fail-safe devices, and that alternative methods of feeding, watering and environmental maintenance be available for breakdown emergencies. Birds should have water freely available and be fed at least once every 24 hours, and when birds are force moulted, it is acceptable to withhold food and water for "short periods" only. Provision for a code of practice to improve the care and handling of poultry during transportation is urged. It is also suggested that officers of the Agricultural Development and Advisory Service examine existing cage systems and where necessary make recommendations to reduce injury to birds.

Examples of subject areas recommended for government-funded research include: Studies of behavioral and environmental requirements; stocking density in relation to welfare and performance; management of deep litter systems to reduce disease risks; causes of leg weakness in broilers; welfare aspects of induced (forced) moulting; research and

alternative systems to battery cages such as getaway cages and straw yards and their advantages and disadvantages in relation to welfare; and alternatives that eliminate surgical management practices such as de-beaking and declawing.

## WILDLIFE

### *Government Report on the 1080 Collar*

Predator control efforts in the western United States have recently focused on the McBride toxic collar, also known as the livestock protection collar. The toxic collar contains quantities of Compound 1080, a controversial substance which had widespread use for predator and rodent control until it was banned by Secretary of the Interior Cecil Andrus in late 1979. Subsequently, Secretary Andrus modified this ban to permit research on the 1080 collar in Texas.

The 1080 collar was developed as a technique to kill "problem" coyotes, i.e., those which attacked livestock. The characteristic neck-attacking behavior of these coyotes provided the rationale for the design; depredating coyotes would ingest the toxicant upon biting and puncturing the rubber collar.

Between November 1978 and March 1980, the Denver Wildlife Research Center (DWRC) of the U.S. Fish and Wildlife Service conducted field tests on the 1080 collar to monitor its efficacy in reducing predation on livestock. Lab and pen tests were also conducted to assess nontarget poisoning hazards, to analyze tissue residues, and to evaluate the use of alternative toxicants. The findings appear in a government report issued in June 1980 (*Use of Compound 1080 in Livestock Neck Collars to Kill Depredating Coyotes*, Guy E. Connolly, U.S. Fish and Wildlife Service, Denver Wildlife Research Center, Denver, CO).

### Methods and results

In the DWRC study, collars were strapped to the necks of a "sacrificial" group of lambs and/or ewes, which was separated from the rest of the flock. This target flock was then set out to pasture and predation was recorded over a period of days. If predation ceased, collars were removed and the flocks recombined until further attacks occurred. The report states that out of the 28 field tests, "...17 tests were successful in that predation stopped or declined following either short-term or long-term use of the collars." The remaining tests were unsuccessful because a) predation stopped for unknown reasons, b) coyotes were killed by other methods, c) predation continued, or d) the test was stopped prematurely. The major practical disadvantage of the collar for livestock owners is the extensive manipulation of the flocks required to direct predation toward collared animals and to monitor collar effectiveness in open range situations where animals stray afar.

The hazards to nontarget animals were examined under field and experimental conditions, using magpies and domestic dogs. To assess secondary hazards, captive magpies were allowed to scavenge coyotes which had been poisoned by 1080 collars as well as a coyote which had been massively overdosed with 1080. One magpie, whose death was attributed to starvation, contained low residues of 1080 after having fed on a coyote which had attacked a collared lamb. No sign of intoxication was observed in any of the birds that had been fed tissue with extremely high concentrations of 1080. As previous studies have revealed a higher sensitivity to 1080 in magpies than in other scavengers, the researchers concluded that secondary poisoning was not a significant hazard. Primary poisoning from feeding on coyote-killed livestock with punctured collars was similarly examined using magpies and

dogs. No poisoning was evident, apparently owing to the "intrinsic feeding behavior of scavengers" which caused them to avoid the collars and to feed on tissues exposed by the coyote.

Eight other toxicants were tested, on captive coyotes directly and in collars. PAPP (p-aminopropiophenone) was faster acting than 1080 (1 hour 14 minutes as compared to 4 hours from lamb kill to death of coyote), but regurgitation by some coyotes prevented it from being lethal; sublethal doses evidently did not cause aversion. The lethal concentration of PAPP is much higher than that of 1080, thus warranting further research on safety and nontarget hazards. None of the other experimental toxicants had any advantage over PAPP or 1080.

Based on its conclusions that 1080 is environmentally safe and a selective, effective predicide, the DWRC recommended increased experimental use of the 1080 collar. Although development of alternative toxicants was also recommended, researchers thought it unlikely that a better substitute for 1080 would be found. Because of the energy-intensive application of the 1080 collars, it was felt that their use would be restricted to ranchers and would be impractical for governmental predator control agencies.

### **Flaws in the project**

There are several serious drawbacks to the approach and conclusions of the researchers. As they were presented in the report, the methods of identifying predator kills leave room for misinterpretation. As veterinarian Stanley M. Dennis states (*Vet Med/SAC* 75:845-852, 1980): "Finding a dead lamb with signs of predator damage does *not* confirm that the death was caused by a predator. Cause of death can only be determined by careful postmortem examination." The report does not indicate

that such thorough examinations of dead livestock were made. "Hemorrhage at wounds, tooth punctures, and obvious tooth damage to large bones, and predator tracks" were the criteria used to differentiate predation from other causes of death. Although these criteria indicate the presence of a predator, they do not necessarily distinguish killing from scavenging. (See *Int J Stud Anim Prob* 1(5):285-286, 1980).

In the test procedure, predation was monitored after collaring the livestock. The test results often do not merit the conclusion that reduced predation was proof of collar efficacy. The low levels of predation observed during the five month period November to March was a widespread phenomenon occurring in six separate instances, and cannot be attributed to the effects of the 1080 collar. Control of the experimental design was slack, owing to financial and logistical considerations, and other forms of predator control continued simultaneously, often "vigorously," with the collar tests. Evidence is circumstantial, and therefore serious doubt is cast on the role of the collar in the 17 "successful" tests.

Although the original intent of the project was to "determine the efficacy of the toxic collar in reducing predation on sheep," it appears that the DWRC established a new intent to make the results of the project more convincing. The efficacy of the collar was assessed by its ability to kill depredating coyotes, *not* by its ability to reduce livestock losses. As the chief research biologist on the project stated, "...it is now clear that documentation of effectiveness in reducing livestock loss is more difficult than proving that the collars take problem coyotes." Although the report stresses the value of the 1080 collar as a selective technique designed to kill "offending" coyotes, test results show that "...the collar appears to be most useful where coyote numbers

have already been reduced by other controls."

In November 1979, Secretary Andrus set specific goals for the federal Animal Damage Control Program. Among these were: 1) to phase out lethal preventive controls in the long-term, 2) to utilize nonlethal, noncapture methods of corrective control, and 3) "to redirect and refocus research efforts to... achieve the long-term objective of preventing predator damage rather than controlling predators." The objectives, conclusions and recommendations of the DWRC report are clearly incompatible with the policy directives laid down by Secretary Andrus and serve as an endorsement of the *status quo* in predator control methods used in the United States.

Natasha Atkins

**Abstract: *Animals and Children***

Children's imaginative drawings of animals have raised the questions whether they correspond to any innate memory or rather to an image injected from the outside. What we know about animals is often what we imagine them to be. Animals in literature, scientific or otherwise, are also frequently creations of adult fears, fantasies, allegories, and perversions. Surrounded, for instance, by insects, they are foreign to us as if they were the inhabitants of another planet. Their wide variety and ready availability in large numbers, the simplicity of their maintenance and subsequent disposal should make them especially suitable for student work, but instructions often by-pass the interest and comprehension of a child.

Much of today's illustrated juvenile literature dealing with animals has very little in common with zoological reality. Five children's books are reviewed to demonstrate the possible value of this type of literature in education. A few young

people will always ignore the basic precepts taught by these and other books. The juvenile delinquent is a case in point. But rather than trying to teach kindness to animals, the mere conveyance of facts about them will prepare the young mind far better to accept kinship with animals.

Humane education far too often preaches more than it teaches. The World Federation for the Protection of Animals formulated a Pledge of the Young Animal Friend to which young correspondents unhesitatingly subscribed. With ways and means found to bring the children's minds back to what might be assumed to be there from the outset, to what one could call the memory of past evolutionary stages, to a time when we were more akin to animals, we shall be able to instill the respect due to animals as to all of life's other phenomena. — **K. Frucht** (Abstract reprinted from *Anim Regul Stud* 2: 259-273, 1980. Author's address: WFPA, Dreikonigstrasse 37, Zurich CH-8002, Switzerland.)

# A Strategy for Dog-Owner Education

Ian Dunbar

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By conservative estimates, the humane societies and societies for the prevention of cruelty to animals in the United States euthanize over 15 million pets each year. It is a great shame that people who have devoted their lives to animals should be forced to destroy the majority of animals that pass through their hands. In addition, the Pet Food Institute's 1975 Survey revealed that a high percentage of pet owners were unsatisfied with their animals and ended up giving them away, taking them to animal shelters, or losing them in accidents. It would appear that only a minority of pets enjoys the luxury of spending their sunset years with their owners. Moreover, the great majority of former pet owners would not consider acquiring another pet. In contrast to the past, when owning a dog served some utilitarian or recreational purpose, or was simply an enjoyable endeavor, it seems that most pets today achieve only object status. Despite the fact that dogs and humans have enjoyed a close association for several thousand years, the majority of dog owners are relatively unaware of what their dogs are doing, or perhaps more to the point, what they are doing to their dogs. What is more ironic is that many of these problems could easily be avoided.

Many people and organizations tend to blame the dog problem on irresponsible ownership. This, I think, is a nominal fallacy: Labeling a problem is a poor alternative to attempting to understand and perhaps alleviate it. I doubt that the majority of dog owners are intentionally irresponsible, but rather that they are inadequately educated. The 'average dog owner' really only wants to know how to teach the dog basic obedience with the shortest expenditure of time and energy and how to deal with the more common behavioral problems such as aggression, house destruction, barking, roaming and chasing and the occasional neurosis. However, very few of the books available to the dog-owning public supply this information. It is interesting that although there has been considerable research in the area of animal learning within the last century, few of these findings have been put to practical use in the obviously applicable field of dog training. (Ironically, however, many findings from animal experimentation have been overextrapolated to the realm of human psychology.) Instead, the majority of dog-training books describe methods that were devised at about the time of the Great War. It is true that a good trainer can do wonders with a mediocre method, but most dog owners are not professional trainers. Instead they are plumbers, car mechanics, brain surgeons, legal secretaries, parents, etc., and as such they need to be taught the easiest, quickest and most effective way to train a dog.



In order for any program of dog-owner education to be practically acceptable, it is important to keep legislative changes to a minimum. I would propose only one major change: that dog owners be required to apply for a license *before* obtaining a dog. At the time of application the prospective owner could be supplied with an information package containing advice on dog behavior, training and husbandry. In this fashion, the owner would receive relevant information at a time when it would be most beneficial. The first few months of a puppy's life are crucial. This is the time when experiences are new and exert a maximal effect on shaping the dog's personality. All too often, owners discover this fact when it is much too late. For example, some dog-training books instruct owners not to begin training until the dog is 4-6 months old... utter nonsense! At the latest, training should commence as soon as the puppy comes into the home. Owners should also be instructed on how to prevent the development of overly aggressive and/or destructive tendencies. The mandatory early license application would, it is hoped, help to reduce impulse buying and the giving of puppies as unsolicited pets. In addition, the foreknowledge of what to expect from a dog and how to prevent or correct annoying behavior problems would help to make the dog-human relationship more enjoyable for both parties.

I would not advocate raising the license fee substantially in the U.S., but it is essential that there be better licensing controls. Licensing could be easily and effectively controlled by a) making it illegal to sell or give a dog to anyone who has not already applied for a license; b) encouraging people who regularly come into contact with dogs (e.g., veterinarians, trainers, groomers, animal control officers) to report those that are unlicensed; and c) imposing an escalating scale of fines for license dodgers and dog owners who regularly fail to adhere to other local ordinances.

Such a program would require the cooperation of a number of large organizations. It would be nice to see the humane societies and SPCAs lose their present major role as extermination facilities and instead be allowed to administer the licensing program along with animal control agencies and to concentrate on education. At the time of license application, the prospective owner would be given a registration card, which would later be signed by a veterinarian when the pups receive their shots. (Subsequent mandatory, periodic injections would also be recorded on the card.) When the full quota of puppy shots has been administered and before the dog is no more than four months of age, the owner may obtain the dog license tag. The collar tag could be color-coded to facilitate the identification of expired licenses. Thereafter, the license could be renewed every two or three years so as to ease the administrative burden. The time of issuance of the initial license tag would be an ideal opportunity to test the owner's comprehension of the information package. This could be in the form of a series of multiple choice questions much like the written test for obtaining a driver's license. Although a low score on the test should not necessarily be used to prevent someone from owning a dog, the test would allow the licensing authority to concentrate its educational efforts on potentially poor pet owners. (However, in Toronto, I believe that people are not allowed to adopt a pet if they fail to qualify as responsible pet owners after completing a questionnaire.)

The aims of the animal control agencies (sometimes acting with the humane societies and SPCAs) would be first, to selectively remove unlicensed dogs, and second, to control the licensed population. The latter task should emphasize a

quality care and educational program and preferential treatment for licensed dogs. For example, owners of lost or impounded dogs would be notified immediately if the dog is properly tagged. An unlicensed animal would be kept for a specified time, and if not claimed, euthanized as a public health hazard (no evidence of rabies injections), whereas a licensed dog would be kept for a longer period. There should be a sliding scale of fines, with the highest fines for unlicensed animals, or for allowing aggressive dogs or estrous females to run freely. On the other hand, if an owner fails to adhere to local ordinances, e.g., by letting the dog go unleashed, the fine could be minimal (perhaps only a warning), provided the owner is present and the dog is under control, or the dog is close to home and otherwise well-behaved.

Of course the question remains: Where is the money going to come from? I believe that with a potential two- or threefold increase in license revenue and with a swinging increase in fines, the licensing program may well turn out to be self-supporting. However, money will definitely be needed to get the program off the ground and to finance the information package. I feel that the Pet Food Institute, or individual pet food companies, would be ideally suited for this privilege. This is not because I believe the pet food industry should feel responsible because they realize millions of dollar profit from the dog-owning public. (I think it is mainly the responsibility of pet owners if they see fit to spend that much money on pet foods each year.) Instead, I feel that financing the program would be in the best interests of the pet food industry. It would most certainly bring them some good press, and the opportunity to publish an accurate information booklet that would reach every dog owner is an ideal advertising platform for their products.

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## Farm Animal Welfare: Some Economic Considerations

Frances Turner and John Strak

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There has been increasing public concern in the U.K. and other European countries about some of the intensive methods of livestock production used in modern agriculture. The battery system of egg production, which produces almost all of the eggs consumed in Britain, has aroused particular opposition, but there is also strong feeling about housing systems which effectively immobilize

their inhabitants, such as certain types of veal calf and pig rearing units. In a test-case in West Germany recently, an egg producer was charged with "continuous cruelty" to his 60,000 strong battery flock. A high court decided that it was cruel to deprive the birds of the ability to follow their behavioral instincts to scratch, preen and stretch their wings. This ruling cannot, however, be regarded as final.

The effects of such production techniques on the quality of life of the animals involved have led some interest groups to campaign for changes in the British Ministry of Agriculture, Fisheries and Food Codes of Practice relating to animal welfare. More restrictive codes are sought which would limit the methods of production available to the farmer by preventing the use of certain currently popular intensive systems. It is generally agreed that the costs of producing livestock products affected by these proposed restrictions would rise, although it is not clear by how much. It is not difficult to understand how this increase in costs might come about.

Farmers, just like other businessmen, attempt to produce a saleable product at the least possible cost to themselves. In this way they hope to assure themselves of some profit, and hence to earn a living. In itself this profit motive cannot be criticized, but in attempting to maintain their profits, farmers have adopted more intensive systems of animal production. In turn, the benefits from farmers using these new techniques have accrued to consumers in the form of relatively less expensive food. Clearly, by restricting the use of factory farming methods (which are associated with lower unit costs of production) there may be significant effects on the cost of producing food and, ultimately, on the price paid for food by the consumer.

Estimating the total net change in production costs which would result from a switch to less intensive systems is not easy. Various contradictory claims have been made by both farmers and welfare groups, focusing attention on the more obvious costs of change—how much it costs to produce a free range or a strawyard egg as opposed to a battery egg. But whatever the size of any direct increase in costs in the changeover from one system to another, this is only one facet of the total economic cost. There are also likely to be significant changes in the structure and pattern of resources used in U.K. agriculture as a result of the adoption of less intensive systems of livestock production. The indirect costs associated with these latter changes need to be fully recognized and understood before any changes in the Codes of Practice relating to animal welfare are implemented.

The farming sector of the U.K. has, over time, responded to a particular range of prices and available technology. Farmers have made decisions about the choice and scale of production based upon the different levels of profit associated with different production systems. It is this process of innovation and adoption of new technology in response to competition between farmers that has resulted in the prevalence of factory farming techniques, especially in the pig and poultry sectors. If, however, the welfare codes are revised, farmers would then have to base their production decisions on a different set of prices and technology, and the effect on the structure of the U.K. agricultural industry may be dramatic. For instance, extensive 'outdoor' systems of pig production approved by the welfare groups require less capital, but more land and probably more labor, than an intensive piggery. There may also be significant diseconomies of size, especially for labor, associated with less intensive systems

of egg production e.g. the strawyard system proposed as an alternative to battery egg production. All this suggests that the growth of larger and more capital intensive units in U.K. agriculture may be seriously questioned by radical changes in the animal welfare codes. There may even be a reversal of the outflow of labor from agriculture seen in recent decades.

A move to less intensive systems could affect the use of energy by the farming sector. In these energy-conscious times the increase or decrease in energy used as a result of changing the production process in farming needs to be recognized and assessed in relation to the overall use of energy by society.

Environmental aspects of animal production should be considered as well. More extensive production systems with a shorter period of animal housing and probably lower stocking densities generally, may reduce problems of environmental pollution resulting from animal waste disposal or utilization. Similarly the problem of smell nuisance arising from some intensive units may also be reduced.

Another important consideration is that even if the costs of alternative intensive and less intensive systems of production do not differ greatly, there may, nevertheless, be significant costs in adjusting from a production structure based upon one method of animal production to another based upon revised animal welfare regulations. These adjustment costs may be so high that any proposed changes would, if effected immediately, place a substantial cost burden on existing producers. If the various welfare groups wish to obtain the support of farmers they should recognize this problem of the adjustment costs facing producers and either press for compensation on their behalf or accept that any proposed changes in the relevant Codes of Practice would have to be phased in over a period of years. This latter alternative of gradual change is also likely to be more acceptable to foreign suppliers of food imports to the U.K.

It should be clearly recognized by all concerned that the imposition of stricter animal welfare regulations in the U.K. would require, for consistency and effectiveness, the banning of imports of the relevant farm products from countries with lower welfare standards. Since the U.K. is a relatively large importer of food, this action would have important implications for international trade relations, especially within the European Economic Community. The assessment of the full impact would require considerable further analysis. An immediate ban would obviously reduce the quantity and increase the price of imported foodstuffs available to the U.K. consumer. Again, it is likely that such a policy would only be accepted by all affected groups if introduced gradually.

We hope that this brief discussion of the impact of animal welfare considerations on the producers and consumers of food has identified the factors that should be included in any objective analysis of what is often an extremely emotional subject. Welfare groups, consumers and politicians alike should be made aware that farmers, by using the least cost intensive methods of animal production available to them, do so in response to competition among themselves (and with foreign producers). This process of competition has resulted in the particular structure of farming observed in the U.K. today. If society considers that these least private-cost methods impose too high a social cost, in terms of public anxiety, environmental pollution etc., and that farmers should be prevented from using them, then significant costs are likely to be incurred. Amongst these is the direct cost to the consumer of an increase in the price of

food. Apart from this, there are likely to be large adjustment costs borne by producers (at home and abroad) as existing production systems are discarded in favor of those advocated by the welfare groups. Furthermore, the adoption of these less intensive forms of farming may result in a completely different pattern of labor and capital use in the U.K. farming sector.

The subject of animal welfare is undoubtedly one of great public concern. However, it is also one of great complexity, and if changes in the regulations governing animal production methods are to be made, those changes should take full account of the implications for producers, consumers and society in general. The farming industry should not interpret the interest in animal welfare as a threat to its livelihood nor should consumers dismiss lightly the likely changes in costs or structure of farming that may result from a revision of the Codes of Practice relating to animal welfare. The appropriate animal welfare policy for society will be identified only when all the interested parties become fully aware of the consequences of their actions.

[Ed. Note: Independent of any proposed changes in the British Codes of Practice, the U.K. veal calf industry (Quantock Veal) has taken the initiative of switching from individual crate rearing to the use of straw-filled group pens. According to the company's marketing director, the system is working out to be cheaper for the farmer. (See *Int J Stud Anim Prob* 1(5):283-284, 1980.) Also, for further discussion see V.R. Eidman and D.D. Greene, "An Economic Analysis of Three Confinement Hog Finishing Systems", University of Minnesota Agricultural Experiment Station Bulletin #535, Minneapolis, MN, 1980. The authors conclude from their comparative analysis that more intensive housing systems do not in and of themselves constitute a clear-cut economic advantage for producers; rather, "The 'right' system for an individual producer depends ultimately on the producer's preferences, managerial ability, and financial situation."]

# The Psychology of Euthanizing Animals: The Emotional Components

Charles E. Owens, Ricky Davis  
and Bill Hurt Smith\*

## *Abstract*

*The emotional effects of euthanizing unwanted animals on professional animal control personnel are examined using written statements of and discussions among twenty-six euthanasia technicians at a workshop during a national session of the Animal Control Academy (Tuscaloosa, AL). Emotional conflicts arise in significant part from the dilemma that the same public which is responsible for the problem of unwanted animals also has a markedly negative perception of euthanasia, and by extension, of those who perform euthanasia. During discussions, the euthanasia technicians revealed a variety of strategies for coping with feelings of isolation, alienation and sorrow. These included intellectualization, avoidance of unnecessary contact with the animals, and belief that the animal is being spared greater suffering. The participants tended to place the burden of guilt attached to destroying healthy animals on irresponsible owners rather than on themselves.*

As the American population has increased so has the number of pet owners and subsequent number of pets. This growing population of animals, specifically cats and dogs, has created additional responsibility for the field of animal control.

When animals are abandoned, mistreated, improperly supervised or pose a population problem, responsibility for monitoring, controlling, and caring for them falls on professional animal control personnel. Since it is impossible to find homes and provide continuing care for all animals, it then becomes necessary to put them to death. Euthanasia technicians are charged with the responsibility of providing a "painless" and "merciful" death. However, what may be a physically painless death for the animals may be a psychologically painful event for the euthanasia technicians.

To understand the psychological pain experienced by a person who must euthanize animals one must first understand the contradiction inherent in the job.

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Euthanizing animals is one of the most challenging and yet undesirable services performed by animal control personnel. On the one hand they must hold a special interest in the well-being of animals; on the other hand, they must purposely destroy animals. The task of killing an animal is further complicated by the fact that some animals disposed of are not necessarily dangerous, diseased or anti-social.

A considerable amount of information is available about the technical component of euthanization; however, very little is known about the human aspects. How does one justify the act of euthanizing animals? Is euthanization performed by individuals who are callous, insensitive and who enjoy the act of killing animals? Is this act performed by emotionally unstable persons who displace their frustrations and feelings of powerlessness onto helpless animals and thereby feel relieved and powerful? What are the emotional demands made on the animal control personnel who euthanize animals? These questions were formally addressed during a national session at the Animal Control Academy in Tuscaloosa, Alabama. Results and discussion are presented below.

### ***Background: The Dilemma of Euthanizing Animals***

Historically, attitudes toward and treatment of animals grew largely out of religious, moral and metaphysical convictions (Singer, 1975). The Bible clearly defines the relationship between man and animal, suggesting that God gave human beings dominion over every living thing (Genesis 9: 1-3). One of the ways that humans exercise dominion over animals is by using them as a source of food. In fact, man's right to kill an animal and eat it has never been seriously challenged. Some individuals might not like the fact that animals are killed to provide food, but since meat is generally considered an important part of the daily diet, the objection to killing animals is minimal. Thus, those who kill animals for human consumption can see themselves as contributing to the maintenance and survival of the human race.

Another way that our society has exercised control over animals is by utilizing them in scientific research (Ryder, 1975). The fact that there are similarities between the physiology of humans and other animals led to the routine use of animals in scientific experimentation by the early 1800's. As a result of this practice, vital information about the operation of the human body has been obtained. Many scientific and medical discoveries that have contributed to improving the quality of human life have resulted from earlier experiments on animals. (Stanley *et al.*, 1972).

However, even in the use of animals in experimentation there has been concern for humane treatment. The American Psychological Association's (APA) Committee on Precautions and Standards in Animal Experimentation formulated six principles to guide the use and humane care of animals. (APA, 1963). [These principles were last updated 3 September 1979 by the APA Committee on Animal Research and Experimentation. —*Ed.*] These principles require that unnecessary discomfort to animals be avoided whenever possible and any discomfort experienced should occur only when the researcher is convinced that it is necessary and justified by the significance of the research. This may not be viewed as an ideal use of animals; nevertheless, the fact that animal experimentation may prolong human life or improve the quality of human life makes it more acceptable.

The researcher or student can rationalize, even if the animal must be sacrificed, that he or she is doing it in the best interests of science and humanity. (Regan, 1976).

The situation is very different for the person who euthanizes animals. In contrast to those who kill animals for meat or use animals in experimentation, euthanasia technicians are very much aware that killing these animals would be unnecessary if society were more concerned with the living conditions of animals in America. Euthanizing animals under their jurisdiction is not performed to directly improve the quality of human life but to "clean up" society's inhumanity and insensitivity to animals. The "merciful" killing of unwanted, healthy or unhealthy animals reflects people's failure to exercise control over animals in a responsible manner.

Ironically, it seems that the public does not accept its culpability in the process and, in fact, frowns at those who perform such acts. The dilemma faced by many euthanasia specialists, then, is how to cope with negative feelings engendered by taking the lives of animals. How do they maintain a positive self-image when performing a task that is made necessary by the public, but at the same time perceived negatively by the public?

### *Sample and Setting*

Twenty-six persons who perform euthanasia attended a three-day Animal Control Academy training session for euthanasia technicians at the University of Alabama in Tuscaloosa, Alabama. One-half of the group had just completed a two-week basic training course for animal control officers also offered by the Academy. As part of their training, all twenty-six participated in a two-hour workshop entitled "The Psychology of Euthanasia." The individuals were from different parts of the country, and they brought with them a variety of different experiences in animal control handling. The ages of the participants ranged from late teens to late fifties.

### *Procedure*

The main objective of the workshop was to allow participants to express their feelings and concerns about euthanasia in a supportive environment. Since it was clear that a lecture on a subject as delicate and sensitive as killing animals was not the most appropriate way to facilitate the expression of feelings in a short period of time, two techniques were utilized.

First, two days before the workshop, the Training Session Coordinator requested that participants write about their feelings on the subject of the euthanasia of animals. The responses were collected and subsequently analyzed.

Second, the format for discussion during the actual session was stimulated by seven statements in a consensus statement form. The statements were selected because of their rather general and nonthreatening nature. The participants were given the consensus statements and asked to select one of four responses that most nearly reflected their feeling. The responses were: strongly disagree, mildly disagree, mildly agree, and strongly agree. For discussion purposes, the "mildly" and "strongly" are combined and the responses are presented as either



agree or disagree categories. In order to minimize shallow and flippant responses, participants were told that they would be required to justify their selection to the larger group.

Participants completed their statements individually. Afterward, each person was assigned on a random basis to groups of four. A leader chosen for each group was given the task of keeping the group focused on each statement, facilitating conversation, and ensuring that everyone had the opportunity to express their reasons for selecting a response. Each group was directed to arrive at a group consensus (agreement) for each statement. While group agreement was highly desirable, prior experience with consensus statements has shown that some statements might not yield agreement. This was acceptable, as one of the real values of the statements was to stimulate discussion. Group leaders summarized their group's selections and reported these to the larger group.

## Results

### *Consensus Statements*

1. Euthanizing animals is a needed service for the community.
2. It takes a special type of person to euthanize animals.
3. I believe in the use of the death penalty for criminals.
4. It's much easier to euthanize animals if a person is aware of this responsibility before he/she accepts the job.
5. The community appreciates the fact that you are performing the service of euthanizing animals.
6. The thing to do after you finish euthanizing animals is to go somewhere by yourself and relax.
7. The feeling one experiences most in euthanizing animals is guilt.

There was almost unanimous agreement among the groups that they were performing a necessary service for the community (1). There was equally strong agreement that the community did *not* appreciate or understand their mission (5). In fact, some participants admitted that they tried to avoid discussing the details of their job with individuals in social settings primarily because a discussion eventually led to a negative reaction from others.

The participants generally agreed that a special type of person is needed to euthanize animals. The qualities generally ascribed to these individuals were positive traits, such as compassion, understanding and the ability to meet the public (2). Individuals who were insensitive to pain and suffering or who enjoyed killing animals were not considered desirable.

The statement on the use of the death penalty on criminals provoked the most heated debate and the most disagreement (3). Individuals took both extreme positions. One conclusion that evolved from the debate was that animal control personnel viewed euthanizing animals and the use of capital punishment on humans as completely unrelated. It appears that killing animals has made them neither more nor less favorably inclined toward the death penalty.

Knowing that they might be required to euthanize animals as part of the job did not seem to make the actual performance of the act less painful or less stress-

ful (4). When it came time to euthanize animals there were still unpleasant and uncomfortable feelings.

A great deal of diversity about how to cope with feelings that result from euthanizing animals (6) was expressed. Individuals seemed to defuse negative feelings in very different ways. Some preferred to be in the company of others while others found it less stressful to be alone. To relax, a few resorted to drinking; others preferred physical activity. Clearly, how one chose to cope with feelings which resulted from euthanizing was an individual matter.

Guilt was not considered a commonly felt emotion (7). Although some admitted to feelings of guilt, these feelings were often mixed with stronger feelings of sympathy and sorrow. Participants generally spoke of feelings of sorrow when the animals had to be killed, but did not express guilt because fault for the animals' death was not theirs. To put it simply, they were performing an unpleasant yet necessary service.

### *Written Statements*

The written responses proved to be consistent with the results of the consensus statements and provided additional insight into how specific individuals cope with the task of euthanizing animals. Various coping strategies are employed by euthanasia technicians to cushion the trauma and unpleasant feelings that accompany the act of euthanasia.

Permeating most responses was the theme of protecting oneself from the full impact of the act by isolating one's feelings from the act. Some accomplished this by talking about euthanasia of animals formally or intellectually. Technicians wrote:

*"You have to be rational about this and consider the seriousness of animal overpopulation."*

*"I fully realize that it is a job that has to be done and there is no way out of it."*

Some technicians even believe not only that death is in the animals' best interest but that euthanasia specialists are the best persons to perform this service.

*"I would rather (euthanize the animals myself than leave it to) someone who doesn't know what they are doing."*

*"I have no qualms about it because the animal is suffering and I am doing the animal a favor."*

Others stated that they control their emotional involvement by consciously avoiding physical contact and interaction with the animals.

*"I avoid looking at the animals or getting attached to them."*

*"I can't stand the feelings of death in my hands so I just don't think about it or even look at the animals."*

*"I take a mechanical approach in that I do not (or try not) to be very familiar with the animals that I may have to destroy, which works 90% of the time."*

Placing blame on society for the plight of animals seems to minimize feelings of guilt expressed by animal care personnel.

*"Those owners should be ashamed of themselves bringing these animals in to be killed."*

*"I find myself calling pet owners every name in the book sometimes."*

*"I feel anger at the people who bring these animals in and then blame us for killing them."*

*"I feel anger when I see the car pull in with the back seat full of puppies because I know what's going to happen to them."*

The anger is usually directed, if only mentally, at pet owners; however, some technicians displace their anger and it invades their personal life.

*"When I put an animal to sleep I get so angry with my friends and relatives and end up alienating myself from them when they don't try to understand."*

*"My home life was on the edge of destruction."*

*"I have not found that I can talk about this subject in any depth with my friends without resentment on their part."*

For some, the process of euthanasia awakens unpleasant emotional memories. Statements reflective of this are:

*"I know how it feels to be unloved because I was unloved as a child and sometimes even now."*

*"It makes me feel so inadequate and insecure."*

*"I can understand what animals feel when they are not cared for because I have been there."*

In spite of the unpleasantness of the job, or their personal feelings, many find ways to accept the unacceptable (Hilgard et al., 1975):

*"I don't think about it because it's my job."*

*"At first it used to bother me, but I've gotten used to it."*

*"After 5 years I have come to the realization that I am doing the animal a favor."*

While some may be able, eventually, to get accustomed to and accept euthanizing animals by using different coping strategies, there were a few who admitted readily that the negative feelings will continue and that nothing will help.

*"I'm never going to get used to killing animals."*

*"Everytime I put an animal to sleep I feel like a murderer, especially when the animals are perfectly healthy."*

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## *Discussion*

The results of this inquiry clearly show that many euthanasia technicians feel that they are performing a service which is thankless and undesirable, but necessary. This condition is certain to create feelings of ambivalence, insecurity and emotional conflict. It is evident that individuals are emotionally affected by euthanizing animals.

Equally obvious is the fact that euthanasia technicians feel somewhat alienated from others in the larger community who do not euthanize animals. They feel that they cannot discuss their occupation in social settings and receive positive responses from those who are not in the field of animal care and control (Smith, 1980). Consequently, many find it necessary to create clever and evasive responses to inquiries about their job or tend to restrict their socialization to other animal control personnel. Unfortunately, the technician may also feel isolated from other animal control personnel because they also may not be sympathetic to the role of the technician.

An additional source of frustration for some is that they find it difficult to discuss their jobs or their feelings with family members. This means that the traditional support of groups that most individuals use to help them through emotionally stressful periods may not be available for euthanasia technicians. All cope as best they can using a variety of strategies.

## *Conclusion*

It seems evident that technicians performing euthanasia on animals feel a need to vent their concerns about animals to the public (to get support and understanding from society at large as well as from their co-workers); to find constructive and effective methods for dealing with the feelings that accrue from killing animals; and to have a continuous support group that is not only sympathetic to their dilemma but also shares other similar professional concerns. There are a number of ways that animal control and animal welfare agencies can help euthanasia specialists deal with euthanizing animals and the resulting negative feelings. Some of the more obvious are:

1. Allow time at staff meetings for technicians and other personnel to exchange their ideas and feelings on the topic of euthanasia.
2. Arrange speaking engagements to interested groups, organizations and classes explaining their position and the public's responsibility in making euthanasia necessary. This helps the general public to understand the euthanasia technicians' dilemma and provides a chance for animal care personnel to vent their frustrations and concerns.
3. Encourage employees to become involved in daily activities, hobbies, and situations that allow individuals opportunities to relax and to cope with the anger, frustration or ambivalence connected with euthanasia. This is especially important during the hours after work.
4. Permit technicians to attend yearly meetings that focus on both the human and technical aspects of euthanizing animals. This helps the individual to identify with a continuing support group.

While these recommendations will help euthanasia specialists cope effectively with some of the emotions they experience and will provide an atmosphere of professionalism, the dilemma remains.

## References

- American Psychological Association (1963) "Guiding Principles for the Humane Care and Use of Animals," *Casebook on Ethical Standards of Psychologists*. American Psychological Association, Washington, DC.
- Hilgard, E., Atkinson, R. and Atkinson, R. (1975) *Introduction to Psychology*. Harcourt Brace Javanovich, Inc., New York, NY.
- Ryder, R. (1975) *Victims of Science*. Davis-Paynter, London, UK.
- Regan, T. and Singer, P. (1976) *Animal Rights and Human Obligations*. Prentice Hall, Englewood Cliffs, NJ.
- Singer, P. (1977) *Animal Liberation*. Discus Books, New York, NY.
- Smith, B.H. (1980) Shelter workers talk about euthanasia, *Shelter Sense* 3(3): 1-2.
- Stanley, B., Godlovitch, R. and Harris, H. (1972) *Animals, Men and Morals*. Taplinger, New York, NY.

# Breeding and Use of Nonhuman Primates in the USA

Joe R. Held\*

### *Abstract*

*Several species of nonhuman primates, each possessing specific characteristics of particular value, are used by the United States biomedical community in a wide variety of health-related activities. These animals are man's closest relatives and are indispensable in the effort to understand and control human health problems.*

*The destruction of primate habitats and embargoes on export of primates from source countries have decreased the supply of these animals. Continuation of many ongoing and new activities contributing to the improvement of human health is threatened by inadequate and erratic supply of these resources. In the U.S., a program has been developed to meet health needs for primates by: 1) ensuring the most effective use of primates; 2) developing domestic production of primates; and 3) contributing to conservation programs to ensure a stable supply and long-term availability of primates from their countries of origin.*

### *Introduction*

Nonhuman primates are indispensable in modern biomedical research, biologics production, and in testing compounds for toxicity. These animals are especially valued because of their evolutionary kinship to man, both in gross anatomical resemblance and behavior as well as in specific biochemical similarities. Because of this close relationship, biomedical and behavioral studies of nonhuman primates offer particular insight into parallel situations in man. Not only were nonhuman primates the key to development of antipoliomyelitis vaccine, but they also have contributed greatly to our knowledge and understanding of other entities such as malaria, yellow fever, measles, enteric diseases, tuberculosis, mental disorders, and viral oncogenesis, (Goodwin and Augustine, 1976). New biomedical discoveries can be expected to depend upon the availability of these animals. In addition, the actual application of the fruits of research depends to a large extent on nonhuman primates. Without preliminary testing in these animals, the risks may be too great to apply theoretical knowledge directly to humans.

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TABLE 1

**U.S. Estimated Requirement for Nonhuman Primates by National Need  
(Interagency Primate Steering Committee)**

Required by Law or Regulation	7,000
Production of Biologics	1,000
Testing	3,500
Research	22,500
TOTAL	34,000

The United States biomedical community needs about 34,000 nonhuman primates each year (Table 1). Of these, approximately two-thirds are needed for research, and about one-fifth to fulfill regulatory requirements. In 1974, the Institute of Laboratory Animal Resources, a part of the National Academy of Sciences, surveyed nonhuman primate users and found that pharmacology and toxicology research together with vaccine production and safety testing accounted for 37 percent of the primates used (Committee on Conservation of Nonhuman Primates, 1975).

Based on past utilization, we have calculated that of the 34,000 primates needed, 24,000 have their origins in the Old World, and 10,000 in the New World. Altogether, about 35 different species are involved, each possessing specific characteristics of particular value in meeting national health needs. The relative importance of each of these species is continually changing. Some factors influencing this change are: an acceleration in the state-of-the-art of biomedical research resulting in an increasing need for a larger number and wider variety of animal models more closely related to man; the identification of characteristics not previously recognized which make a species particularly desirable as a model of human disease; and the substitution for species now in short supply. At present, less than a dozen of the total 35 species account for the great majority used.

### *Old World Primates*

Of the Old World species used, over 80 percent (20,000) are macaques, with rhesus accounting for more than one-third of the total. The remainder consists mainly of African greens (2,100) and various species of baboons (1,200).

#### *a) Rhesus monkey*

The rhesus monkey, or *Macaca mulatta*, has always been considered the general purpose laboratory primate, apparently because it was relatively easy to obtain, a convenient size for most studies, and a hardy animal. The rhesus also is by far the most widely used primate for the production and testing of biological products such as poliomyelitis and other vaccines. As a result of a long history of its use and the data that have been developed with respect to the anatomy, physiology, and behavior of this animal, it is highly preferred for many experimental purposes.

Geographically, the rhesus monkey is found within India and neighboring countries. Unfortunately, the number available has decreased considerably in recent years. In 1972, an estimated 50,000 of these animals were exported from In-

dia, the primary source country. In 1974, the Government of India began restricting the numbers exported, and early in 1978 it imposed a ban on exports of all primates. Small numbers of these monkeys occasionally were exported from Bangladesh, but that country too has not permitted exports since early in 1979. Although the possibility remains of obtaining rhesus from other countries of southern Asia, the wild populations are relatively small and even at best would allow the withdrawal of only limited numbers of animals.

**b) Crab-eating macaque**

The *Macaca fascicularis*, commonly known as the cynomolgus, long-tailed, or crab-eating macaque, is second only to the rhesus in the numbers used for medical purposes in the United States. In the past, approximately 6,000 were required annually. This species also is considered to be a general-purpose primate, and for many uses, it is substituted for the rhesus. Moreover, for some purposes it is considered preferable, because it is more tractable and is slightly smaller. The trend of substituting the cynomolgus for the rhesus is accelerating as the supplies of rhesus have become more restricted. However, the cynomolgus has not yet been accepted in the United States as a substitute for the rhesus in the safety testing of vaccines, especially poliomyelitis vaccine.

The cynomolgus is available from Southeast Asian countries where it remains relatively plentiful. However, habitat destruction and other competition from man are causing a continuous reduction in the wild population of this species in its native countries. Thailand recently prohibited their export; the other source countries for the United States are Indonesia, Malaysia, and the Philippines.

**c) Other macaques**

It is estimated that at least 1,000 macaques other than *Macaca mulatta* and *M. fascicularis* are needed per year. These macaques are used almost entirely for research purposes, rather than biologics production or testing. The fields of research are numerous and, as a group, the neurosciences, including behavioral studies, seem to have the greatest need for them.

Recently, spontaneous diabetes mellitus was discovered in the Celebes ape, *Macaca nigra*. The use of this "other" macaque will add a new tool to the armamentarium of diabetes research, which should contribute greatly to the understanding and eventual control of this disease.

**d) African green monkey**

Approximately 2,100 African green monkeys, *Cercopithecus aethiops*, are used each year in the United States, primarily for the production of biological material and toxicology testing. Tissue cultures made from the kidneys of this animal are essential for the production of SV40 virus-free poliomyelitis vaccine. The National Heart, Lung, and Blood Institute also is developing this monkey as a model for the study of hypertension. The use of this animal for other biomedical purposes has been somewhat inhibited because of its association with the outbreak of a severe and fatal disease among laboratory workers in Marburg, Germany, who had contact with newly imported monkeys of this species.

The African green monkey is widely distributed throughout the African rain forest, woodland, and savannah and has been readily available from normal commercial channels. However, potential policy changes, including conservation measures in source countries, make the future availability of this species uncertain.



### *e) Baboon*

Various species of baboons are used in biomedical research. These large, hardy primates are especially desirable for surgery, neurophysiology, and reproductive physiology research. Baboons are considered general-purpose primates, and approximately 1,200 are used in the United States each year. Baboons are found over a very wide range of Africa, south of the Sahara. Although these animals remain relatively abundant, they are being exterminated in many areas because of the damage they cause to agricultural crops. Supplies of wild-caught baboons probably will be available via existing trade channels for the next few years.

### *f) Other Old World primates*

Various other Old World nonhuman primates are utilized in research for special purposes. The most important is the patas monkey, *Erythrocebus patas*, another African species recently found to be particularly promising for certain types of cardiovascular research. In addition, tree shrews, bushbabies, and occasionally other species are used in small numbers for special purposes in a wide variety of institutions.

The gibbon has attracted special interest because it has been identified as a model for the study of certain cancer viruses. However, this animal is virtually unavailable to biomedical research. It is found throughout most of southeastern Asia, including nearby islands of Indonesia. Since this animal is confined to areas of primary forest, clear-cutting lumbering practices and general deforestation have caused gibbon population reductions in some localities. In recognition of this situation, this animal has been identified as endangered, and steps have been taken to control international trade of this species.

The chimpanzee, which originates from West Africa, also is endangered. None have been imported into the United States from the wild for several years. However, some of these animals are available from established U.S. breeding colonies. The chimpanzee is the irreplaceable model for study of certain human health problems. The alternative subject for such studies is man, and research with human beings is less feasible now than ever before. The chimpanzee is in great demand for research in hepatitis, especially since it is the only animal other than man known to be susceptible to hepatitis B. This ape also is used for studies of various other human diseases and for psychobiological research. In total, approximately 180 chimpanzees are needed each year. As man's surrogate for evaluation of many health hazards and health protective measures, this animal is without equal.

## *New World Primates*

Of the approximately 10,000 New World species needed each year, half are squirrel monkeys, a quarter owl monkeys, and the remainder marmosets and various other species.

### *a) Squirrel monkey*

The squirrel monkey, *Saimiri sciureus*, is considered to be a general-purpose experimental primate and the primate second most widely used by the worldwide biomedical community. The numbers required within the United States rank third

after the *Macaca mulatta* and the *M. fascicularis*. The estimated 5,000 squirrel monkeys required each year are used for a wide variety of health research and testing purposes, including the major areas of nutrition and cardiovascular research, as well as neurophysiology, pharmacology, toxicology, and behavioral and stress studies.

Although the squirrel monkey is widely distributed in significant numbers throughout northern South America and Central America, each geographical group has differing characteristics. Those found in the regions near Leticia in Colombia and Iquitos in Peru are most in demand owing to the extensive baseline of data collected on these animals. However, they are no longer available through commercial channels.

#### *b) Owl monkey*

The owl or night monkey, *Aotus trivirgatus*, is the only suitable model currently known for human malaria chemotherapy and immunology studies, and is considered essential for these areas of research.

Investigators of viral oncology also are finding this animal to be of increasing value. In addition, the owl monkey holds special importance in vision research because of its unique eye structure.

#### *c) Marmosets and tamarins*

Numerous species of marmosets and tamarins have special value for biomedical research. *Saguinus mystax*, the mustached tamarin, is especially needed because of its susceptibility to hepatitis A virus. Other species are used in virology, immunology, dental studies, reproductive physiology, behavioral studies, and other research. Their potential use as test animals for hepatitis and for cancer research suggests that research demands for these species will increase and large numbers will be needed over a long period of time.

The cotton-top marmoset, *Saguinus oedipus*, is particularly important for work in viral oncology. This species, however, is endangered and only limited numbers are available from domestic breeding programs.

Although U.S. researchers have used the small Brazilian common marmoset, or *Callithrix jacchus* only infrequently, this animal is becoming a valuable model in Europe, especially in Great Britain, for a number of research and testing purposes. Some of the most notable of these are reproductive physiology (including testing of antifertility products), teratology, toxicology, infectious diseases, drug safety, and a variety of behavioral studies. Since export of this animal from Brazil is currently prohibited, those marmosets being used in Europe come from domestic breeding programs which have proved to be practical and cost-effective.

#### *d) Other New World primates*

Relatively small numbers of such other South American primates as capuchin and spider monkeys are used for special kinds of research. Demand for any of these animals could increase greatly since new discoveries can transform infrequently used species into highly desirable models.

### *Primate Supply*

Unfortunately, many exciting research projects are impeded by the instability of supplies of nonhuman primates from all parts of the world. Most of these

animals are captured from wild populations in their native habitats and, until recently, were regularly available. Now, however, destruction of primate habitats for agricultural development or lumbering threatens the existence of many primate populations. The loss of primates to the demands of research is negligible in comparison with the enormous losses inflicted by the destruction of the natural habitat by urbanization, overcropping for the pet trade, and hunting in areas where these animals are eaten. As a result, several previously abundant species that have not been used in research or testing are now scarce.

Motivated by concern for conservation, some primate source countries have instituted measures to limit or prohibit exports. In addition to the virtual unavailability of the rhesus resulting from the Indian government's ban on primate exports, Brazil, Colombia, Peru, and other Latin American countries over the last decade decided to embargo the exportation of their New World primates.

Acknowledging the growing shortage of various species of nonhuman primates in the United States and the impact of these shortages on medical research, a National Institutes of Health (NIH) Interagency Primate Steering Committee (IPSC) was established in 1974 with representatives from government agencies concerned with human health and biological research. After consulting the academic community, the pharmaceutical industry, and private research institutions, the committee developed a National Primate Plan to ensure that the requirements for nonhuman primates for all essential health activities can be met now and in the future.

Three courses of action are recommended to meet these health needs:

- i) Producing primates in the United States;
- ii) Ensuring stable supplies of primates from their native lands;
- iii) Making the most effective use of the available primates.

### *Domestic Breeding Projects*

In the past, U.S. domestic breeding colonies were funded primarily for reproductive research; reproduction served experimental purposes rather than as a replacement source for animals used in other projects. This attitude was justified in the past when imports were available and inexpensive. However, this dependency on primates caught in the wild created major problems for the biomedical community when foreign supply sources proved to be unstable or discontinuous.

To date, the majority of our domestic breeding projects have centered around the rhesus monkey because of its high rate of utilization, irreplaceability for certain regulatory purposes, and past history of supply interruptions (Table 2). One of the earliest experiences of breeding rhesus monkeys in the United States occurred in the 1930's when a colony was established for behavioral studies on Cayo Santiago, 3 miles east of Puerto Rico. This island colony was originally established for behavioral studies, which continue to be its primary focus. This highly successful colony has been maintained at a population of approximately 800 with the daily supplemental provision of food and fresh water and killing of surplus animals. Since the quality of these animals has been outstanding and they are very well suited for many biomedical research projects, it was natural to look at island breeding as a way to expand our U.S. production. Island breeding col-

onies have also been established off the coasts of Florida and South Carolina.

The IPSC has encouraged the development of alternative breeding systems as well. One system is composed of large corrals from a quarter of an acre to two acres in size, permitting somewhat closer observation of the animals and greater ease of handling, accomplished by herding the animals into special chutes.

The California Primate Center at the University of California (Davis) has successfully utilized large enclosed ½-acre pens for production. These covered pens offer greater security as well as additional surface for the animals' use. Smaller enclosed pens which house a harem of one male with 10-12 females are used at some centers.

Corn cribs have become very popular for the harem breeding of rhesus. They can be built relatively inexpensively, and the round configuration allows animals to avoid being cornered by their cagemates. Corn cribs and other small pens accommodate smaller groups of animals and allow even closer observation and manipulation of the colony.

To ensure a continuous, stable, and long-term supply of nonhuman primates, the IPSC recommended that a series of general-purpose domestic primate production colonies and a large number of special-purpose colonies be designed and established. The National Primate Plan contains specific recommendations for the number of colonies by species and the desired productivity of each colony. As a general policy, multiple colonies dispersed over wide areas are preferable to a few very large colonies. This is intended to provide protection against loss from epidemic disease or other disasters.

Since future biomedical needs may require species not currently used in sufficient numbers to warrant general-purpose production, the committee will continually reevaluate the need for each species to determine annual requirements and adjust domestic production programs to assure future availability. In addition, the committee will review all breeding proposals and facilitate information exchange to ensure the development of a balanced, nationally coordinated breeding program.

**TABLE 2 U.S. Rhesus Monkey Production**

	Breeding Females as of 1/1/80	Production	
		1979	1980 (Anticipated)
Federal Sector	7,947	4,321	5,015
Nonprofit Sector (includes Universities and Foundations)	602	293	403
Commercial for Profit	1,629	773	1,043
TOTALS	10,178	5,387	6,461

At present, these breeding colonies meet only a limited part of the nation's needs; domestic rhesus production supported by government agencies now meets only 25-35 percent of our requirements. Nonetheless, our remarkable accomplishments with this species in relatively few years have demonstrated the practicability of domestic breeding programs.

Although our breeding plans were initiated in response to international shortages, we recognize the long-term benefits of laboratory reared primates for biomedical research. By the turn of the 21st century, most primates used in research will be laboratory reared. The use of these animals will revolutionize research just as the use of laboratory reared rodents increased the sophistication of our current projects.

Hobbs and Bleby (1976) identified the following advantages of using domestically bred primates: First, laboratory reared animals will be of better *quality* since they are basically disease-free. The use of these animals will increase the validity of research and eliminate a variety of hazards to personnel. Second, the supply of uniform groups of genetically characterized animals will result in better *standardization*, more accurate work and lead to a reduction in the number of primates needed for a particular study. In addition, once animals are genetically characterized, we can measure the impact of other factors such as nutrition. Third, the problem of *availability* would be obviated by ensuring continuity of supply, which would save research time and money. In addition, domestic breeding of animals would eliminate the mortality loss we experience with imported animals. Fourth, the animals would be more *suitable*. With constant supply and knowledge of available stock, primate usage could be extended to include pregnant, fetal, and young animals. Fifth, some of the *ethical* objections to primate research would be removed since there would be less need to use captured wild animals.

Contrary to statements sometimes expressed, the biomedical community recognizes its practical as well as moral responsibility to protect wild primate populations in their natural habitat. Although we are increasing our domestic breeding capabilities, native populations are valuable natural resources that must be conserved. Of the approximately 201 species in 56 genera, only a small number have been studied sufficiently to warrant domestic production for research use. We must assure the continuation of gene pools for the over 90 percent not now being considered for research production. Some species not now used may have potentially important characteristics as animal models to study human disease and can be maintained only through good conservation in source countries.

Thus, from a practical as well as ethical viewpoint, every effort should be made to maintain naturally occurring primate populations as renewable resources in source countries.

### *Source Country Breeding Projects*

For these reasons, we are cooperating with the Pan American Health Organization (PAHO) to provide assistance to Latin American source countries in the management of their primate resources. The objective of such joint efforts is to develop national programs in countries that have important populations of New World primates to ensure the perpetuation of these natural resources. PAHO-supported programs include surveys of primate populations, management and monitoring of those populations, and establishment of breeding programs for indigenous primates (PAHO, 1975).

In mid-1975, a breeding station was established at Iquitos, Peru. Currently,

the following species are being bred at this station: moustached tamarin (*Saguinus mystax*), red-bellied tamarin (*S. labiatus*), pigmy marmoset (*Cebuella pigmaea*), owl monkey (*Aotus trivirgatus*). In addition to the actual net production, much needed knowledge will be gained about the reproductive behavior of these species, in captivity and in free-ranging colonies located on islands, as well as knowledge about other physiological and pathologic features of these animals.

The PAHO/Iquitos project also is providing funding for studies of primate population distribution and densities in cooperation with Peruvian wildlife authorities. Many of the areas studied have not been fully surveyed before. Several spinoff benefits already have resulted from these studies. Since all wildlife, not just primates, is surveyed, national wildlife authorities and project managers can make recommendations affecting all indigenous wildlife. At the same time, they can determine which areas of the country are in danger from such human activities as hunting, farming, homesteading, and oil and mineral exploration.

Several long-term benefits are expected from the Peruvian project. The station at Iquitos is providing an opportunity to create wildlife management programs as well as exchange programs for national and foreign fellows in primatological research. Further, increased attention paid to the primate population provides the native human population with a greater appreciation of the value of these animals and an enhanced understanding of the need for conservation and reduction of unnecessary natural resource and habitat depletion.

Establishment of breeding and conservation programs in source countries ultimately will benefit both the biomedical research community and the source countries. Progeny from the breeding station in Iquitos, Peru, as well as wild animals trapped for export based on animal population census studies, have already been made available to the biomedical community. In return, the biomedical community under PAHO auspices has provided the source country with technical support, financing, and assurance of the long-term survival of valuable natural resources. Based on the success of these PAHO projects, the World Health Organization is exploring the possibilities of establishing similar programs in Africa and Asia.

### *Limitations on Primate Use*

Nonhuman primates must be used effectively and only when essential. Decreasing availability and increasing costs have caused a reduction in primate use within the last decade. Although economics will continue to affect primate usage, the decision that a primate must be used should be based on sound scientific reasoning. A series of five criteria for evaluating research using nonhuman primates has been developed. These criteria are:

- 1) that the research can be done best with primates;
- 2) that the species is the most appropriate;
- 3) that the minimum number for acceptable results be used;
- 4) that the primates not be sacrificed except where necessary as part of the investigation;
- 5) and, if possible, that there be a sharing of tissues.

We are incorporating these criteria into the management procedures of government agencies sponsoring primate research.

The committee has also been concerned with the allocation of primate supplies. In view of the uncertainties of current and future primate species, the time may soon be here when there will be insufficient numbers of one or more species to meet minimum health needs of the U.S. The plan provides an outline to be followed in such a situation. When such difficult choices have to be made, the priorities of distribution will be: 1) to fulfill legal requirements; 2) for use in breeding colonies; and 3) for other research and development purposes.

Since the legal requirements are developed by government agencies as a result of their regulatory authority, the National Primate Plan recommends that any proposed federal guideline, standard, or regulation which either requires primate usage or restricts their availability be submitted to the committee to assess the potential impact on the overall national supply. We are also encouraging users to reexamine their needs for acceptable alternatives as well as encouraging the development of new techniques and procedures that will further reduce their primate requirements. In addition, we are encouraging researchers to make the specifications for animals as rational and precise as possible. Finally, we must consider the ethical responsibilities shared by all of us who provide and use primates as research animals. Humane care issues, while not new, have become amplified in recent years. We must be prepared to deal with these issues which are surrounded by so much emotion.

The biomedical community is searching for alternatives to animal experimentation not only for humane, but also for economic reasons. Unfortunately, alternatives to testing the combined complex physiological systems found in the intact animal are currently quite limited, and to meet present needs can only be considered complementary or supplementary. However, such procedures may help to screen agents requiring testing and thus help to slow down the increasing requirements for animals.

## Conclusion

In summary, a number of important steps have been taken to assure adequate primate supplies. The research done with these animals is essential to provide knowledge of benefit to all people in all nations. A balanced program is needed worldwide that includes conservation of wild populations; improvement of wildlife management programs; better means of capture, conditioning, and shipping; increased domestic breeding of animals; and judicious use of these precious resources.

## References

- Committee on Conservation of Nonhuman Primates (1975) *Nonhuman Primates: Usage and Availability for Biomedical Programs*. National Academy of Sciences, Washington, DC.
- Goodwin, W.J., and Augustine, J. (ed.) [1976] *Primate Research*. Plenum Press, New York, NY.

Hobbs, K.R., and Bleby, J. Jr. (1976) *Laboratory Nonhuman Primates for Biomedical Research in the United Kingdom*. Medical Research Council, Laboratory Animals Centre, Carshalton, UK.

Interagency Primate Steering Committee (1977) *National Primate Plan*. National Institutes of Health, Bethesda, MD.

Pan American Health Organization (1975) *First Inter-American Conference on Conservation and Utilization of American Nonhuman Primates in Biomedical Research*, Lima, Peru, 2-4 June 1975. PAHO, Washington, DC.

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# Scientific Issues and Regulation of Primate Use

Andrew N. Rowan\*

## *Abstract*

*Some of the patterns of use of nonhuman primates in the USA and Europe are outlined and a few specific examples of inappropriate and/or unnecessary use are described. The primate research resources program in the USA is examined and some suggestions as to how the program could be made more responsive to humane and conservation concerns are presented.*

The National Primate Plan (U.S. Dept. of Health, Education and Welfare, 1980) opens with these words: "A severe and long-term shortage of nonhuman primates threatens the continuation of many essential health activities." It is certainly true that the supply of nonhuman primates has been disrupted over the past few years in India, Bangladesh and Malaysia. However, it is by no means clear that the continuation of essential health activities is threatened.

The National Primate Plan specifically notes that the use of nonhuman primates in lifetime testing of steroid contraceptives is so critical that it is required with a force equivalent to that of law (Food and Drug Administration, 1969). However, the steroid metabolic patterns of the primates used in this testing are sufficiently different (Shackleton and Mitchell, 1975) to prevent meaningful extrapolation of results to human beings. Data gleaned from studies on

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animals involving chronic administration of a new steroid contraceptive for several years are virtually useless for regulatory purposes. Therefore, in terms of health hazard evaluation for humans, these chronic tests are a waste of time, money and animals.

Similarly, the National Primate Plan notes that between 5,000 and 6,000 macaques are required annually for vaccine production and testing, mostly for poliomyelitis vaccine. This represents a considerable reduction over the late 1950's when hundreds of thousands of rhesus macaques were used every year in the development and production of polio vaccines (LeCornu and Rowan, 1979). This reduction has occurred, in part, through the development of better methods of harvesting monkey kidney cells. In Denmark, for example, these methods have resulted in a reduction in the number of monkeys required from 400 to 40 (Fenestad and Petersen, 1979). However, it is now technically possible to eliminate the present demand for macaques without jeopardizing human safety.

Currently, two types of polio vaccine are produced: the live, attenuated (Sabin) vaccine and the inactivated (Salk) vaccine. The virus for both types can be grown in human cell culture although the yield from a given quantity of diploid human cells is lower than in early generation monkey cell cultures (Beale, 1979). Only small amounts of virus are needed for immunization with the Sabin vaccine (the virus grows in the vaccinee), but larger quantities of the Salk vaccine are required, thus making it more expensive than the Sabin. The price of the Salk vaccine could, however, be reduced by using cell-suspension cultures or microcarrier techniques to produce a larger virus yield from a given volume of culture fluid (Petricciani *et al*, 1979). The technology is being developed and thus the economic need for monkey kidney cell cultures could possibly be eliminated. This would have health advantages since monkey kidney cell cultures are notorious for their contamination by extraneous agents, and up to 50% of monkey kidney cell cultures may have to be discarded because of viral contaminants (Beale, 1979).

Both vaccines are tested in several animal species, including monkeys. It is difficult to envisage a total replacement for monkeys in Sabin vaccine neurotoxicity testing, but one could certainly eliminate the monkey test for the Salk vaccine. The cell culture test for live virus particles is more sensitive (safer?) than the monkey test (Beale, 1978) and the World Health Organization (WHO) is considering a recommendation for a suitable cell culture test as a replacement method (F. Perkins, personal communication). Therefore, with a few technical modifications, and a change of attitude among regulators one could eliminate the need for monkeys to test the inactivated vaccine. However, memories of the Cutter disaster, when over 200 children contracted paralytic poliomyelitis after receiving an inadequately inactivated batch of Salk vaccine, still loom large in many minds despite our much greater understanding of the manufacturing process and our ability to guard against a repetition of such a disaster.

Almost twenty percent of the projected U.S. demand for primates is accounted for by the polio vaccine program. A switch from the Sabin to the Salk vaccine, the use of cell lines (human?) and microcarrier culture techniques, and dropping the requirement for the monkey test in Salk vaccine production could virtually eliminate this need. There are a few minor technical problems to be solved and much economic, political and bureaucratic inertia and resistance to overcome. Finally, it should be noted that there may still be some need for the

Sabin vaccine to deal with polio outbreaks since even Salk acknowledges that the Sabin vaccine is more effective under these circumstances (Boffey, 1977). The respective proponents of the Salk and Sabin vaccines are involved in a bitter argument over which is better in terms of effectiveness and safety (Editorial, 1977; Salk and Salk, 1978). Where one has a well-disciplined community (as in Sweden), there is no doubt that the inactivated Salk vaccine is effective, but there are questions as to whether it can provide the same level of protection in Third World countries. The testing issue has also not yet been decided by the World Health Organization and even if the WHO does produce a new recommendation, inertia will militate against authorities replacing the old monkey test. Nonetheless, it is clear that the use of nonhuman primates is not an *essential* requirement for the production and testing of polio vaccine.

While the use of monkeys in polio vaccine and oral contraceptive testing is a story of conflicting scientific data, conservative attitudes and inertia, the laboratory chimpanzee situation is a catalogue of mismanagement in which the chimpanzees come out a very distant last. In 1977, the National Institutes of Health (NIH) circulated a draft primate plan in which an annual need for 180 chimpanzees was estimated (Interagency Primate Steering Committee, 1977). However, in 1978, the Interagency Primate Steering Committee (IPSC) published a report of a task force on chimpanzees which estimated a total annual demand of about 700 chimpanzees (Table 1).

**TABLE 1 — IPSC Task Force Estimate of the Number of Chimpanzees Being Used in or Required for Biomedical Programs.**

Field of Research	Current Use	Projected Future Annual Demand
Behavioral Sciences	(not given)	50
Infectious Diseases		
Hepatitis	156	314
Other	46	46
Neurological Diseases	(not given)	45
Hematology, immunology & immunogenetics	150	50
Toxicology&pharmacology	200	100
Reproductive biology	85	50
Other (aging, aerospace, etc.)	25	80
TOTALS	662+	735

Not only was this projection vastly inflated, but the reasons given for why the chimpanzees were so necessary were gross overstatements (Rowan, 1979). It is now commonly (if privately) accepted among laboratory primatologists that

this report exaggerated the demand, presumably to make a case for additional importation from the wild as well as for more support for domestic breeding programs. There are currently 1100+ chimpanzees in laboratory and/or breeding facilities in the United States. These animals produce between fifty and seventy offspring annually, but a number of the infants die before reaching maturity. Little concerted action is being taken to improve this state of affairs and, in fact, one of the most successful breeding colonies has been broken up (and may well be destroyed) as the result of inadequate coordination and bad planning by funding agencies.

Several years ago, the Laboratory for Experimental Medicine and Surgery in Primates (LEMSIP) was awarded a contract for chimpanzee breeding for a hepatitis study program by the National Heart, Lung and Blood Institute (NHLBI). When the contract came up for renewal, it was put out for competitive bids and another three year contract awarded to the Southwest Foundation for Research and Education (SFRE). The stated reason for moving the contract was that SFRE had quoted a price that was half LEMSIP's projection of \$1.1 million. This judgment has been challenged, and New York University has sued NIH on the grounds that the issuing of the RFP (Request for Proposal) and review of the submissions had been mismanaged. Meanwhile, the chimpanzees still had to be moved. Over a period of two months, 73 animals were trucked from New York to Texas under conditions which, at best, could only be described as highly stressful. It is not particularly surprising that nine animals have subsequently died and that the breeding program has been totally disrupted. It is pertinent to note that LEMSIP's 1978 breeding success rate of 35% (J. Moor-Jankowski, personal communication) was among the best (if not the best) in the country.

This particular saga has been related in order to illustrate how the animals come off second best, especially when the situation is highly politicized, as in the LEMSIP-SFRE-NHLBI dispute. The chimpanzees were treated as chattel, to be picked up at a moment's notice and hauled thousands of miles across the United States without regard to anything more than mere survival. It was predicted that the move would disrupt the colony and that it would never achieve the stated goals of the contract, namely, ten offspring per annum. This prediction has, unfortunately, been borne out by subsequent events, and SFRE looks as if it will be hard-pressed to maintain the colony numbers, let alone increase the colony by thirty healthy offspring by June, 1982. However, NHLBI staff responsible for managing this contract have indicated that this does not concern them since they anticipate that they will no longer need a special chimpanzee colony after another year or two. It is not clear what will happen to the remaining animals when the contract expires.

Apart from the problems surrounding the long-term maintenance of the colonies of great apes (and most are kept in facilities which are grossly inadequate considering the animals' social and psychological needs [cf. McGrew, 1981]) there are other aspects of primate research in the United States which give cause for concern. It has been stated that the seven primate research centers around the country fail, with one or two exceptions, to provide adequate value for the money and top class research (NIH, 1976; Hobbs and Bleby, 1976). By contrast, LEMSIP, which, ironically, is on the verge of closing down, has been acknowl-

edged to provide excellent value for the money (Hobbs and Bleby, 1976). One of the main problems is that the Primate Research Center (PRC) program has become a self-perpetuating oligarchy within the Animal Resources branch of NIH's Division of Research Resources. In 1975, the PRCs received \$12.5 million for core support out of a total of \$17.1 million allocated to laboratory animal resources. They have since maintained this dominant role within the funding program. Because of the financial muscle behind the PRC program any efforts to reform the program have resulted in cosmetic changes rather than the necessary major overhaul. The Bolt, Beranek and Newman (BBN) consultant panel (NIH, 1976) came out with some relatively hard-hitting proposals for reform, but a subsequent review of the PRC program (NIH, 1979), stimulated by the BBN report, either undercut many of the BBN proposals or was so general and vague as to be virtually useless. According to a member of the second review, the panel did not feel free to entertain any proposals which would have resulted in radical changes in the extent or scope of the primate center program (L. Rosenblum, personal communication). However, the panel did note that the quality of the scientists in the PRCs was below par and that the centers do not have the reputation of being "the place to be."

The undermining effect of the second review was most unfortunate since one of the BBN proposals could be developed to provide answers to many of the problems which currently plague the primate research effort. The BBN panel suggested that a Primate Utilization Authority be established to oversee all primate breeding and use in the United States. This concept is, however, somewhat limited. It needs to be expanded to incorporate conservation questions and to include representation from humane and conservation groups. After all, the Endangered Species Scientific Authority has research community representation. Also, the name should be changed to the National Primate Study Authority (NPSA). There are other precedents for such an organization; for example, the National Toxicology Program is essentially a consortium of federal agencies involved in bioassays and the development of new methods.

The NPSA should include adequate representation from user groups such as NIH and the Department of Defense, as well as from conservation and humane organizations. The NPSA should have oversight for the immediate primate breeding and research programs as well as for the long-term fate of the animals. It should look carefully at the proposed needs for primates and determine just how essential some of the research really is. For example, a European Economic Community task force (Committee on Medical and Public Health Research, 1979) identifies the *essential* primate research needs (Table 2) in a more limited manner than the National Primate Plan (Dept. of Health, Education and Welfare, 1980). In addition, greater attention needs to be focused on primate housing and on some of the research techniques, especially in behavioral studies. If a primate really is a good model of human behavior patterns (such as addiction, depression, anti-social activity), then it presumably has very similar needs to human beings which should be acknowledged and met. If it is not a good model of the human psyche then we should question whether such research should be done at all.

For the great apes, we need to reassess our priorities completely. If the use of these animals is to be justified, then we consider that the following *minimum*

conditions should be met: First, the animals should be kept under conditions which, as far as possible, meet their physical *and* social requirements. Second, breeding programs should be established to obviate any current or future importation from the wild. Third, the research project must not be terminal. Fourth, adequate provisions should be made for the lifetime of the animals being used, and it must be recognized that great apes cannot be moved around as though they were pieces of machinery. It must be stressed that these are minimal conditions; ideally, we should accord the great apes the same quality of facilities and respect that we accord human subjects.

In conclusion, we accept that there are some legitimate and essential uses of primates in biomedical programs, but we do not consider the present level necessary or the current controls adequate. The conservation and humane concerns must be given adequate consideration and the primate program totally re-evaluated. The Primate Research Centers currently receive over \$16 million in core support. It is arguable that far better use could be made of all or a portion of this money if it were allocated to the development of other types of biomedical technology. The development of primate research models appears to have high prestige and yet there is no clear reason why it should. One can only speculate that such prestige stems from an anthropomorphic bias derived from the fact that primates are our close evolutionary relatives. If this is indeed the case, then we need to consider their interests much more closely.

**TABLE 2—Primate Use for Biomedical Research and Health Care (EEC, 1979)\***

Species	Research or Other Activity for which Availability of Primate Species is:	
	Essential	Highly Desirable
Chimpanzee	Hepatitis B (vaccine testing); Hepatitis "non-A-non-B."	Hepatitis A; Certain cardiovascular diseases; Antifertility; Production of antisera.
Macaque (Rhesus and Cynomolgus)	Production and testing of vaccines (mainly polio); Tox- icology and teratology.	Reproductive physiology and anti- fertility; Endocrinology; Diagnos- tic virology; Immunology and transplantation.
New World Monkeys	Hepatitis A (marmosets); Hepatitis "non-A-non-B" (marmosets); DNA and RNA tumor viruses; Hematopoietic chimaerism (marmosets); Malaria (owl monkeys).	Teratology, reproductive physiology and antifertility; Cardiovascular diseases (mainly squirrel monkeys); Pharmacology and toxicology (mainly squirrel monkeys); Immunology and transplantation; Slow virus diseases.
Baboon		Cancer virology; Reproductive physiology.

\*From Reports and Memoranda of the Working Group on the Use and Supply of Non-human Primates for Biomedical Purposes. Committee on Medical Research Commission of the European Communities, Brussels, 1978.

## References

- Beale, A.J. (1978) The use of tissue culture for testing vaccines, *J Royal Soc Med* 71:681-686.

- Beale, A.J. (1979) Choice of cell substrate for biological products. In *Cell Substrates: Their Use in the Production of Vaccines and other Biologicals*, J.C. Petricciani, H.E. Hopps & P.J. Chapple, eds., Plenum Press, New York, NY, pp. 83-97.
- Boffey, P.M. (1977) Polio: Salk challenges safety of Sabin's live-virus vaccine, *Science* 196:35-36.
- Committee on Medical and Public Health Research (1979) *Report of the Working Group on the Use and Supply of Nonhuman Primates for Biomedical Purposes*. Commission of the European Economic Communities, Brussels, Belgium.
- Department of Health, Education and Welfare (1980) *National Primate Plan*. DHEW Publication #80-1520, DHEW, Public Health Service, Washington, DC.
- Editorial (1977) Poliomyelitis vaccines, *Lancet* ii:21-22.
- Fennestad, K. and Petersen, I. (1979) Reduction in number of monkeys used for vaccine production through refinement of technique, *Primaten-Information*, No. 6:8.
- Food and Drug Administration (1969) *Contraception, Estrogens, Progestogens: A New FDA Policy on Animal Studies*. FDA Papers, Vol. 3, FDA, Rockville, MD.
- Hobbs, K.R. and Bleby, J. (1976) *Laboratory Non-Human Primates for Biomedical Research in the United Kingdom*. Medical Research Council Laboratory Animals Centre, London, UK.
- Interagency Primate Steering Committee (1977) *Draft National Primate Plan*. National Institutes of Health, Bethesda, MD.
- Interagency Primate Steering Committee (1978) *Report of the Task Force on the Use and Need for Chimpanzees*. National Institutes of Health, Bethesda, MD.
- LeCornu, A. and Rowan, A.N. (1979) The use of nonhuman primates in the development and production of poliomyelitis vaccines, *ATLA Abstracts* 7(1):10-19.
- National Institutes of Health (1976) *Assuring the Resources for Biomedical Research. An Evaluation of the Scientific Mission of the Division of Research Resources*. Publication #1-RR-6-2101, National Institutes of Health, Bethesda, MD.
- National Institutes of Health (1979) *Primate Research Centers Evaluation Study*. Publication #1-RR-7-2143, National Institutes of Health, Bethesda, MD.
- McGrew, W.C. (1981) Nonhuman primate cognitive capabilities and social requirements. In press.
- Petricciani, J.C., Hopps, H.E. and Chapple, P.J. (1979) *Cell Substrates: Their Use in the Production of Vaccines and other Biologicals*. Advances in Experimental Medicine, Vol. 118, Plenum Press, New York, NY.
- Rowan, A.N. (1979) Chimpanzee task force report, *Science* 203:1069.
- Salk, J. and Salk, D. (1977) Control of influenza and poliomyelitis with killed virus vaccines, *Science* 195:834-847.
- Shackleton, C.H.L. and Mitchell, F.L. (1975) The comparison of perinatal steroid endocrinology in simians with a view to finding a suitable model to study human problems. In *Breeding Simians for Developmental Biology*, F.T. Perkins & P.N. O'Donoghue, eds., Laboratory Animals Handbook No. 6, Laboratory Animals Ltd., London, UK, pp. 159-181.

# LEGISLATION and REGULATION



## *Comparison of French and U.S. Animal Welfare Policies*

In October 1979, the French parliament appointed M. Pierre Micaux to the Ministry of Agriculture to undertake a study of the rearing and slaughter of food animals, the use and care of animals in laboratories, and companion animal problems.

Micaux (known less formally in France as "Monsieur Animaux") and his collaborators made unannounced visits to laboratories, slaughterhouses, kennels, and breeding and rearing facilities. They found that in many cases, regulations were not being observed, and in others, regulations needed to prevent unnecessary suffering did not exist. Micaux also gathered information on how comparable problems were being handled in other countries including the United States.

Last July, "M. Animaux" presented the results of his study to President Giscard d'Estaing in a report which contained three major recommendations for a new French animal welfare policy: 1) launching of a vast public information campaign within

France; 2) creation of an expanded board of animal protection under the Ministry of Agriculture; and 3) drafting of stricter and more enforceable legislation.

These cornerstone recommendations have counterparts in existing policies in the U.S. although emphasis and the degree of federal involvement in specific areas differ. The need to educate the public on the needs and problems of companion animals (overpopulation, abandonment, improper care) is common to both countries. However, in the United States, the responsibility for disseminating information on companion animals has been assumed primarily by the private sector: local and national humane societies, pet food and supply companies, etc. In contrast to Micaux' suggestion that public authorities bear the cost of educating citizens in this area from school age onward, the U.S. government role does not extend beyond issuing information to people who are directly affected by provisions of the U.S. Animal Welfare Act, e.g., breeders and dealers.

The second recommendation, expansion of the existing board of animal protection in France into an agency of the Ministry of Agriculture which would be involved with the rearing, transport and slaughter of food animals, the treatment of companion and pleasure animals, and the care of laboratory animals as well as the issue of animal experimentation itself, is slightly more ambitious than the existing role of the Animal and Plant Health Inspection Service (APHIS), the agency within the U.S. Department of Agriculture charged with administering the Animal Welfare and Horse Protection Acts. (See P. Chaloux and M. Heppner, History and Development of Federal Animal Welfare Regulations, *Int J Stud Anim Prob* 1(5):287-295, 1980). USDA regulates slaughter and some types of transport, but legislation does not yet

cover the welfare of farm animals in the rearing stage. Furthermore, the Animal Welfare Act specifically prohibits the Secretary of Agriculture from having any say on the actual design and protocol of animal experiments. (Congresswoman Pat Schroeder [D-Colo.] has, however, introduced a bill, H.R. 6847, which among other amendments, would delete this proviso.)

The question of government regulation of animal experimentation must also be examined in light of the third proposal, namely, to increase the severity of current animal protection and anti-cruelty legislation. M. Micaux stressed that legislation must be designed to protect the innocent as well as punish the guilty. *Le Monde* (17 July 1980) construed this statement to be a reference to possibly unjust accusations which have been or could be made against those using animals in biomedical research. In the U.S., the care and use of laboratory animals are covered by the Animal Welfare Act; state anti-cruelty statutes are rarely if ever invoked to protect animals in research. If anti-cruelty legislation is made stricter in France, it will be interesting to compare the effectiveness of enforcement with that of the U.S. federal law. In any case, M. Micaux made no radical recommendations concerning animal experimentation, and instead stressed limitation rather than abolition, and the development of alternative methods.

M. Micaux also recommended that French regulations, especially those affecting animals in commerce, harmonize with those of other European countries. Both the EEC and the Council of Europe are working toward that end. For example, the European Commission of the EEC has drafted a regulation which would control trade in endangered species in all EEC countries rather than just in those which have already ratified the Convention on International Trade in

Endangered Species of Wild Fauna and Flora (CITES) (*New Scientist* 87(1213):439, 1980). Regulation of battery housing of food animals and mandatory tattooing of dogs and cats to deter abandonment by owners were two specific measures suggested in the Micaux report which are readily applicable to other European countries and the United States.

Like any other country, France has unique problems in the area of animal protection, owing to myriad factors such as legislative history, cultural attitudes, economic profile and political structure. The new animal welfare policy outlined by M. Micaux, however, points up far more similarities than differences in approach between France and the U.S. and by extension, between Europe and the U.S. in attempting to handle problems of animals, who observe neither national nor political boundaries.

#### *Current UK Legislation on Animals*

Three recent articles by Margaret Cooper, a British lawyer, in the *Biologist* (26:33-37, 1979; 26:110-114, 1979; 27:183-185, 1980) provide a lucid introduction to various aspects of United Kingdom law relating to animal care and animal research. The first article deals exclusively with controls on animal experiments, the second broadens the scope to discuss all animal welfare law and laws to control animal diseases, and the third examines how other laws can affect biologists. The author makes little or no attempt to deal with moral issues or with the current arguments about the need for new legislation. However, there is much useful and interesting information. For example, even if one is not a veterinary surgeon, one is permitted to treat one's own animals, but not those belonging to other people. Furthermore, causing an animal unnecessary suffering because of ignorance of good veterinary practice makes one liable to prosecution under the UK Protection of Animals Act, 1911.



# MEETINGS and ANNOUNCEMENTS



## MEETING REPORT

### *Nonhuman Primates in Biomedical Programs*

The second annual symposium of the Institute for the Study of Animal Problems (Washington, DC), held 15 October 1980 in conjunction with The Humane Society of the United States' annual conference in San Francisco, California, brought together representatives from field primatology, laboratory animal research and the humane movement to discuss scientific and philosophical issues in the breeding, husbandry and experimental use of nonhuman primates.

Although the vast majority of animals used in research and testing are not primates, the subject of nonhuman primate experimentation figures prominently among the concerns of both researchers and animal welfare advocates. These concerns, however, often differ, or at least are expressed differently by each group. At the center of the issue lies an apparent ethical paradox: Nonhuman primates (monkeys and apes), due to their close evolutionary kinship to man, are considered to be eminently suitable

models for certain kinds of biomedical research, yet in the same light, their similarity to humans raises severe doubts about the moral acceptability of subjecting them to an existence which deprives them of freedom, health, and in many cases, life.

The symposium participants offered several strategies for handling this core problem and its surrounding layer of difficulties (e.g., depletion of species from the wild, inaccuracy of experimental results owing to the animals' sometimes pathogenic living conditions). Dr. Joe Held (National Institutes of Health, Washington, DC) presented a paper on the breeding and use of primates in the U.S. which stressed the essential nature of biomedical research and testing on monkeys and apes. While fully acknowledging the ethical as well as practical obstacles to continued importation of species from the wild, and promoting existing U.S. captive breeding programs as a solution, Dr. Held approached the paradox of primate use by placing human health interests in a position of paramount importance; as long as nonanimal alternatives are inadequate to replace current methods involving the use of primates, the emphasis, as expressed in the National Primate Plan of the NIH Interagency Primate Steering Committee (IPSC), must be on ensuring an uninterrupted supply of monkeys and apes for research. Within this context, the ethical responsibilities of biomedical science rest in providing humane care for the animals and in searching out and improving alternatives which, besides being in the animals' interests, are more economical.

Dr. Andrew Rowan (Institute for the Study of Animal Problems) countered Dr. Held's argument that primates are an essential tool for biomedical research in a paper which focused on examples of unnecessary and/or inappropriate use of primates in research programs. Dr. Rowan took

exception to the IPSC statement that a shortage of nonhuman primates threatens "essential" health activities, citing lifetime steroid contraceptive studies and polio vaccine production and testing as two major areas of questionable primate use; the former being unreliable when extrapolated to women and the latter being a case of excessive use of animals in light of currently existing alternatives. Dr. Rowan attributed much of the problem to mismanagement and improper regulation of safety testing and research. He proposed the formation of a "National Primate Study Authority" which would include representatives from humane and conservation groups and exercise stricter control over primate research in the U.S. than is possible within the present NIH structure. In Dr. Rowan's view, the paradox of primate use demands that primate research be pared down to the necessary minimum, funds and manpower be channeled into alternatives and treatment of great apes be upgraded to a point where it is no longer simply humane, but also aligned with the standards established for human experimentation.

Dr. Ardith Eudey (International Primate Protection League; University of Nevada) examined the roots of the paradox, stating that the "Darwinian revolution" which brought the world a nonteleological theory of evolution and contributed to the breakdown of anthropocentric thinking continues to be subverted by an older, dualistic view of man and nature. She illustrated this point with examples from common parlance: primates, like timber, are "renewable resources," monkeys and apes, our closest biological relatives, are sub- or nonhuman primates rather than her suggested term, "alloprimates." According to Dr. Eudey, Darwinian thought can be manipulated as well as ignored, *i.e.*, the emphasis in primate research on taxonomic close-

ness is a human decision. It may not always be appropriate from an evolutionary point of view and may even divert resources from more fruitful types of research. However, as long as research programs using primates continue, the primary goals must be conservation of rare, threatened and endangered species, increased public accountability of scientists, and revision and upgrading of the animals' housing and environment.

This last goal was examined in some detail by two speakers, Dr. Joachim Jaekel (CIBA-Geigy, Basel) and Dr. William McGrew (University of Stirling, Stirling, Scotland). Dr. McGrew maintained that the majority of captive primates live in pathogenic conditions which are either preventable or reversible, and therefore indefensible. Natural selection has shaped not only morphology and physiology, but also behavior. Thus, the captive environment should be as similar to the wild as possible to preserve the mental as well as physical health of the animals. This argument combines ethical, scientific and economic considerations: Ignorance of field studies can result in duplication of laboratory studies which in turn waste money and possibly create more suffering for the animals. Further, captive environments which do not provide for primates' social requirements and cognitive capabilities give rise to bored, stressed animals who are probably more difficult to work with and less likely to yield reliable experimental results.

Dr. Jaekel's presentation emerged as a practical testament to Dr. McGrew's recommendations. He showed a film of the rhesus monkey facility at CIBA-Geigy which appeared to prove that a recipe of simple housing modifications, empathy and common sense can produce healthy, well-adjusted animals who, though deprived of a pristine existence in the wild, manage to lead enriched, minimally stressful lives as ex-

perimental subjects. The CIBA-Geigy facility features a large exercise cage which the monkeys visit daily in groups. They have objects to manipulate and companions to groom, bicker at and play with. The animals forage for their food, which consists of 50% pellets and 50% fruits, seeds, and leaves. Equal to if not more important than physical enrichment is the relationship of the keeper and other personnel with the animals. Dr. Jaekel's experience has invalidated the economic argument against staff spending time with the animals; the time invested in establishing a comfortable, trusting relationship pays off in tractable animals and better data.

Dr. Jaekel offered several explanations for the mechanistic attitude which manifests itself in barren cages, isolation from conspecifics and other conditions which rob the animals of sensory and cognitive stimulation. He made specific mention of dualistic thinking, economic pressures and the magnitude of present day experimental animal use. However, as his presentation eloquently demonstrated, this attitude is neither universal nor immutable.

Two panel discussions followed the formal presentations. The first centered on the development of guidelines for enriched primate housing. There was general agreement among the panel members (Dr. Jaekel; Dr. Michael W. Fox, Institute for the Study of Animal Problems; Dr. Evalyn Segal, San Diego State University; and Dr. Joseph Spinelli, University of California at San Francisco) that behavioral needs of the animals should be taken into greater account in laboratory environmental design. Dr. McGrew recommended the addition of deep litter substrate (sawdust salted with cereal grains) as an immediate practical cage improvement, along with random variation of types and amounts of monkey chow. Dr. Spinelli added that journal editorial

boards could exert indirect influence on the quality of housing and environment by examining the conditioning procedures used by authors of submitted manuscripts as part of the publication decision process.

Up to the point of the second panel discussion on humane concerns in the use of nonhuman primates, there seemed to be genuine communication among the participants with varying points of view. However, when the central paradox was again raised in the form of the question of how to weigh the scientific value of primates against their interests and rights, a fundamental difference in perception of the problem appeared. Dr. William Mason (California Primate Research Station, University of California at Davis) attacked the belief that humans are in a position to judge what is good for other animals as anthropocentric, "naive realism." He denied any prescriptive content to scientific information and theory, stating that ethical choices are individual choices, that science as an institution has only one moral precept (truth), and that the scientist must not be burdened with legislation and regulations which might endanger that institution.

Dr. Mason's comments were challenged by several members of the audience on the grounds that legislation and regulations come into being because of human fallibility and that it is scientists and not an abstract Science which are operative in society and therefore accountable to it. The question of whether science can go beyond the empirical without becoming "anthropocentric" was largely ignored, perhaps because it was perceived as an intellectual cul-de-sac.

As at most scientific gatherings, exchanges became freer as the program neared an end. The atmosphere at the close of the meeting, appropriate to the paradoxical nature of

the subject, was both frustrating and encouraging. Frustrating because one can never be sure whether the new ideas, comments and suggestions generated by the symposium will survive and ultimately be transformed into action. Encouraging because without this first stage of thought and discussion, there can be little or no possibility for such a transformation.

N.A. Heneson

[The formal presentations of Drs. Held, Rowan, Eudey, Jaekel and McGrew will appear in serial issues of Volume II of the Journal beginning with this issue. — Ed.]

*Royal Society of Medicine—Interactions Between Human and Animal Behavior*

The section of Comparative Medicine held a most interesting meeting on 16 April 1980 chaired by the president Dr. P. Muggleton, on the subject of interactions between human and animal behavior. Dr. R. Muggford gave a paper which examined numerous aspects of the behavior of dogs in relation to their owners, from which it was possible to draw many conclusions about the nature of both human and canine species. Unfortunately Mr. A. Yoxall, who was to have spoken, was delayed by a road accident, and could not be present. The discussion was opened by Dr. D. Abrahamson, who broadened the scope of the meeting to explore wider aspects and comparisons between human and animal behavior and between veterinary and medical practice. This was followed by a full discussion in which many members of the audience participated.

It is clear from the numbers of pet animals which are kept, particularly in the more affluent societies, that such ownership must satisfy certain important human needs. Some time was devoted to considering why

people keep pets, in general, and more particularly dogs. Several surveys have been carried out for example in Australia, and in the UK, which have examined the reasons for pet ownership. In a high proportion of cases the reason is companionship. This, particularly in the case of dogs, includes to a large extent the generation of self esteem in the owner, due to the affection shown by the pet. Often the protective value of a dog is an additional factor which makes it a welcome member of a household. There are also social advantages in owning a pet. A person living alone might make few friends, but if he or she has a dog to take for walks, this often leads to conversations with other dog owners or passers-by who will admire the dog as an introductory gambit. A pet in the home can also be a social asset. A study was cited in which elderly single people were provided with a budgerigar. This led to them being more socially accepted, especially by children, who would be interested to visit the pet. Another advantage of such pet ownership is that it imposes a discipline and a daily routine on individuals who might otherwise decline to a monotonous and uneventful life through lack of external demands. The more obviously practical uses of dogs, such as shepherding or retrieving, only accounted for about 10% of the reasons given for ownership in one large survey. It is well known that people frequently enjoy talking to their pets, and this has also been studied by psychologists. Some of the conversations with pets can be likened to that addressed to very young children, and is purely a means of expressing affection. In many cases however, owners will confide their fears or depressions or share their pleasures and elation in conversation with their pets, and may find this very beneficial.

The value of pet animals to hu-

mans requires some explanation, in view of the undoubted disadvantages which pet ownership can also involve. Apart from cost and restriction of freedom, pet owners may face particular problems of difficult behavior in their animals. Dr. Mugford described many such cases, where dog owners had turned to him for advice when confronted with severe and persistent behavioral problems in their pet. It was often possible to suggest causes for the pet's unacceptable behavior, and to find ways of improving the relationship between it and its owner. An example was the dachshund which was a model of good behavior until his owner answered the telephone, at which time he would rush over and bite her leg. This could have been due to the telephone acting as an interruption to the attention the dog was getting from his mistress, and this was resented so forcefully that he discovered a way to quickly terminate the phone call. In many cases where a dog behaves badly, the owner may unknowingly reinforce the unwanted activity by calming and soothing the dog, whereas a sharp reprimand would be more appropriate.

Some behavioral problems may be associated with faults in diet, or possibly endocrinological imbalances. Traditional drug and surgical treatments are widely used by veterinary surgeons, but behavioral training is also a necessary, and perhaps more effective method. A poor relationship may develop between a dog and its owner for a great variety of causes. Failure of the owner to establish dominance can be a factor, but should not be overemphasized. It is certainly not always due to a failing on the part of the owner that a dog becomes unreliable and badly behaved. Observations were quoted which suggested that certain breeds of dog had more behavior problems than others, and the type of problem could also vary from breed to breed.

The point was made that dog breeders select for what is fashionable conformation, and little regard is paid to the features of the dog which make it an agreeable pet.

The incidence of cases of dogs becoming difficult to manage and a problem to their owners is hard to assess. Probably only a small proportion of owner/pet relationships run into problems, but equally it is probable that many are not brought to the attention of a professional adviser. The owner's threshold for accepting injury and embarrassment will be an important factor in determining this.

It was pointed out that, perhaps strangely, many people feel shy at admitting that they are fond of an animal. This applies particularly to professional men, who perhaps think the object of their affection should be a human and are reluctant to admit tender feelings for an animal. It is unfortunate that the curricula of veterinary colleges tend to imply a mechanistic view of animal life. This may be getting less so in recent years, but certainly used to be the case. (In human medical teaching also, there is often too little attention to the mental activities of the patient, this being overshadowed by the depth of knowledge of physical factors.) This dualism, which denies to animals any mental feelings of a human kind, and at the same time diminishes the importance of human feelings themselves, is to be regretted. Both practitioners of human and veterinary medicine would do well to give more thought to the mental activity of their patients. Animals can be of great value to people in many situations, and enhance their awareness and enjoyment of life. Where the human/animal relationship is upset, and the animal behaves badly, it can cause great unhappiness to the owner who may feel both guilt and sorrow at the prospect of having to lose a still-loved pet. These situations require

prompt and careful analysis, which in many cases can restore a good and happy relationship.

G.A. Cullen  
Editorial Representative  
Section of Comparative Medicine

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*Journal of the Royal Society of  
Medicine* 73: 755-756, 1980.

## FORTHCOMING MEETINGS

**The Foundation of Thanatology:** Veterinary Medical Practice: Pet Loss and Human Emotion, March 27-29, 1981, Alumni Auditorium, Black Building, Columbia-Presbyterian Medical Center, New York, NY. Contact Dr. Austin H. Kutscher, Foundation of Thanatology, 630 West 168th St., New York, NY 10032, USA.

**American Association of Swine Practitioners:** Annual Meeting, May 17-19, 1981, Kansas City, MO. Contact Dr. F.D. Wertman, AASP Executive Secretary, 5921 Fleur Drive, Des Moines, IA 50321.

**VII International Congress of the World Veterinary Poultry Association:** July 1-3, 1981, Oslo, Norway. Contact the WVPA Organizing Committee, National Veterinary Institute, POB 8156 Dep, Oslo 1, Norway.

**Hungarian Society of Agricultural Sciences:** International Conference of Ethology, August 24-27, 1981, Agricultural University of Godollo, Godollo, Hungary. Topics include "The Role of Ethology in Large Scale Animal Breeding," and "Developing the Technical-Biological Unit of Industry! Animal Breeding with Help of Ethological Research." Contact Prof.

Dr. J. Czako, Organizing Committee for Congress of Applied Animal Ethology, Agricultural University, Godollo, H2103, Hungary.

**Wildlife Disease Association (Australasian Section):** Fourth International Wildlife Diseases Conference, August 24-28, 1981, Sydney, Australia. Contact Dr. E.P. Finnie, Program Chairman, Toranga Park Zoo, Mosman, NSW 2088, Australia, or Dr. M.E. Fowler, Dept. of Medicine, School of Veterinary Medicine, University of California at Davis, Davis, CA 95616, USA.

**International Conference on the Human/Companion Animal Bond:** October 5-7, 1981, Philadelphia, PA. Sponsored by the University of Pennsylvania Center for the Interaction of Animals and Society and the Delta Group of the Latham Foundation. Contact the Center (above), School of Veterinary Medicine, University of Pennsylvania, 3800 Spruce St., Philadelphia, PA 19104.

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### Correction

In the last issue of this Journal (*Int J Stud Anim Prob* 1(6): 362-365, 1980), James A. Cohen, the author of the Comment piece entitled "Ethology and Laboratory Animal Welfare" was identified as a graduate student in the Department of Zoology of the University of Florida. This information is correct; however, we failed to mention Mr. Cohen's affiliation with the World Federation for the Protection of Animals as their former Scientific Consultant. This was a serious oversight and we sincerely regret the error.

## ANNOUNCEMENTS

### *Forthcoming Articles*

- History of the Humane Movement and Prospects for the 80s—Robert A. Brown
- The Role and Responsibility of Zoological Establishments: An Animal Protection Viewpoint—John E. Cooper
- Government Veterinarians and the Ethics of Regulation—Lester M. Crawford
- Ethical Concerns in Primate Use and Husbandry—Ardith Eudey
- Behavior of Calves in a Railcar Modified for Feeding and Watering in Transit—Ted H. Friend
- Euthanasia of Day-Old Male Chicks—Walter Jaksch
- Toward a New Wildlife Management—Brandon Kuker-Reines
- Biomedical Research and Animal Welfare: Traditional Viewpoints and Future Directions—Franklin M. Loew
- The Case for Revising Our Laws on Animal Experimentation—David L. Markell
- Animal Rights Politics: The Need for the Human Connection—Jim Mason
- Experiences on the Protection of Large Predators in Finland—Erkki Pulliainen
- The Metaphysics of Anthropocentrism—Bernard Rollin
- Nonhuman Primate Social Requirements and Cognitive Capabilities—William C. McGrew
- The Buller-Steer Syndrome—Richard H. Ulbrich

### *Message From the President of ISPA*

Following years of negotiation and preparation, the International Society for the Protection of Animals (ISPA) Board of Directors met recently in Copenhagen and unanimously accepted details of the merger between ISPA and the World Federation

for the Protection of Animals (WFPA). The Council of WFPA had met previously and given its approval to the merger.

The new organization became fully operative on January 1st, 1981 and is called the World Society for the Protection of Animals (WSPA).

The new World Society will emerge stronger and more effective than either ISPA or WFPA operating in isolation. More important still, it will speak out against animal abuse with authority and with one voice.

The World Society's headquarters will be sited at 106 Jermyn Street, London, which will also serve as the Regional Office for Africa and Asia, with subsidiary offices in Africa and Asia planned for the future. The European Regional Office will be sited in Zurich, Switzerland, with Boston, USA, being the Regional Office for the Western Hemisphere. A subsidiary office is planned for Latin America.

For obvious reasons the "ISPA News" and WFPA's "Animalia" will cease to exist on emergence of the new World Society, and it is not without some pangs of sadness to those members of staff who have been involved with both publications for many years. However, we are more than confident that "Animals International" which will be the World Society's principal journal, will incorporate the best of both the other journals and will be informative, factual and interesting.

WSPA will pick up the torch for the protection of animals carried so well by ISPA and WFPA, and will as one unit pursue the theme of animal protection around the world. Animal transportation, legislation, conservation, whales, seals, laboratory animals and many more subjects will continue to be the framework of subjects on which WSPA will carry out its anti-cruelty and protection campaign. The existing members of ISPA and

WFPA have already indicated their enthusiasm and eagerness to support the new Society. Readers are invited to sign up in each of the above-mentioned offices to ensure that the animal protection work, so well started, can be carried forward with an ever increasing momentum until the world is a safe place where animals may live their lives without fear of cruelty on the part of man.

As an individual you are important because, for the World Society to be effective, it really does need your enthusiasm and help in order to be as persuasive in international matters as it is in local or national affairs.

#### *Courses for New Licensees—United Kingdom*

One-day courses for new or aspiring Home Office licensees are being organized by the Institute of Basic Medical Sciences at the Royal College of Surgeons of England. These courses cover law and codes of practice relating to animal work, handling and sexing of animals, techniques for injection and removal of body fluids, anesthesia, analgesia and euthanasia and an introduction to surgery. Practical sessions augment formal lectures and there is ample time for questions and discussion. Publications and equipment are on display and each registrant receives copies of relevant literature.

These courses are primarily aimed at those scientists who are embarking upon research using animals but are unable to spare the time to attend a more comprehensive program of tuition. In addition, however, they prove useful as a revision course for scientific and senior technical staff who are already engaged in such work.

The provisional dates for the 1981 courses are: 4th February, 20th May, and 9th September. Further information on these and other short

courses may be obtained by contacting the Course Organizer, Royal College of Surgeons of England, 35-43 Lincoln's Inn Fields, London WC2A 3PN. [Ed. Note: Persons who wish to do experiments on animals in the UK which are likely to cause pain must first obtain a license from the Home Office.]

#### *Proceedings from Guelph Meeting on the Ethics of Animal Use*

The proceedings of a meeting of scientists and philosophers held at the University of Guelph, June 12-13, 1979 on the ethical and practical aspects of animal rights and animal welfare have now appeared in *Animal Regulation Studies* 2(3), 1980. The authors and titles of their talks are listed below. Please note that one of the articles is by M.A. Fox and another by M.W. Fox. This is not a misprint; they are two different people with very different views.

- F.M. Loew (Baltimore, Md, USA)—Animals in biomedical research: North American practice (pp. 141-144).
- J.R. Hurnik (Guelph, Ontario, Canada)—Animal welfare and modern agriculture (pp. 145-164).
- P. Singer (Clayton, Victoria, Australia)—Animals and human beings as equals (pp. 165-174).
- M.W. Fox (Washington, DC, USA)—Intensive factory farming and the question of animal rights (pp. 175-190).
- M.A. Fox (Kingston, Ontario, Canada)—On justifying the use of animals for human ends (pp. 191-204).
- M. Martin (Boston, Massachusetts, USA)—Vegetarianism, the right to life and fellow creaturehood (pp. 205-214).
- R. Harrison (London, UK)—Animal production and welfare: Practical considerations (pp. 215-222).



- J. Narveson (Waterloo, Ontario, Canada)—Animal rights revisited (pp. 223-236).
- H.C. Rowsell and A.A. McWilliam (Ottawa, Ontario, Canada)—The animal in research: domination or stewardship (pp. 237-254).
- H. Lehman (Guelph, Ontario, Canada)—Concluding remarks: scientists, philosophers and ethical problems (pp. 255-257).



## BOOKS RECEIVED

**RABIES AND WILDLIFE**, D.W. MacDonald (Oxford University Press, New York, NY, 1980, \$28.00).

**ANIMAL HEALTH: A LAYMAN'S GUIDE TO DISEASE CONTROL**, J.K. Baker & W.J. Greer (The Interstate Printers and Publishers, Danville, IL, 1980, \$24.65).

**ANIMALS' RIGHTS CONSIDERED IN RELATION TO SOCIAL PROGRESS**, H.S. Salt (Society for Animal Rights, Inc., Clarks Summit, PA, 1980, \$9.95).

## BOOK REVIEW

**ANIMALS' RIGHTS** by Henry S. Salt (*Society for Animal Rights, Clarks Summit, PA, 1980, \$9.95*) is the reprinting of Salt's 1892 book with a preface by Peter Singer and an extensive appendix containing excerpts from other authors on the topic of animal rights as well as a detailed bibliography. While Salt does not have the fame and reputation of some of his friends, such as George Bernard Shaw, he wrote over forty books, mostly on humane issues such as prison reform and the treatment of animals. One of his books had a major impact on Gandhi and some of his other positions have been incorporated into modern practice.

His argument concerning animal rights is still, however, waiting in the wings. The modern revival of interest in the subject has not added much substance to the original case presented by Salt in 1892 although the arguments have been refined. Thus, his book is of more than historical interest and its reprinting will provide a valuable contribution to the current debate. It will also be instructive to read some of the excerpts provided by Salt in the Appendix since they demonstrate that animal rights is far from being a twentieth century concern. Nevertheless, the bulk of the writing has taken place in the last decade and the book also incorporates a very useful modern bibliography. Even though you feel you already have too many books on the subject, this volume should be added to your library.

Andrew N. Rowan

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**Exclusive publication:** Unsolicited articles are accepted with the understanding that they are not being submitted for publication elsewhere. Material accepted for publication implies transfer of copyright to the Journal. Solicited articles will be dealt with on an individual basis.

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**Organize manuscripts** as follows: Title page (pg. 1) containing title of the article (48 characters), author(s), affiliation, present address, address to where proofs should be sent; Abstract (pg. 2); Text (begin pg. 3) which includes introduction, methods/procedures, results, discussion, conclusion, acknowledgements, references, tables, and figure legends. Special instructions for the copy editor or printer should be affixed on the original copy.

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**References:** The Harvard System, not a numbering system, should be used for the citation of references in the text; e.g., Jones (1971) or (Jones and Smith, 1971), or (Jones et al., 1971). Where more than one paper by the same author(s) has appeared in one year, the reference should be distinguished by 'a', 'b', 'c', etc. (e.g., 1971a). The list of references should be arranged alphabetically by authors' names and chronologically per author. References cited with (*et al.*) in the text should include *all* authors' names in the reference list.

**Titles** of journals should be abbreviated in accordance with the *Chemical Abstract Service Source Index*. References to books/monographs should include editors, edition/volume number, publisher, city and state/country where published and relevant page numbers. A paper in press may be referenced if it has been accepted for publication. References to personal communications and unpublished work are permitted in the text only.

### Sample references

Smith, J. (1970) The effect of stress in swine on meat quality. *J Appl Ethol* 5:125-127.

Smith, J. and Jones, S. (1970) *Animals*, 2nd ed, Academic Press, New York, NY, pp. 8-14

**Tables:** These should be concise and typed double-spaced throughout.

**Figures:** Submit 3 sets of glossy prints (no negatives) with identifying arrows and letters contrasting sharply with the background. Indicate on the back the author's name, figure number and 'top.'

**Figure Legends:** Captions should contain sufficient information allowing the figure to be clearly understood without reference to the text.

**Types of articles:** The following requirements are given as a guide only; one double-spaced typed page contains approximately 250 words.

**News and Comment Articles:** 1000-2000 words and where necessary, brief references cited, e.g., (*Appl Ethol* 10:111, 1979) in the text.

**Review Articles:** 5000-8000 words with a comprehensive list of references to be used as source material.

**Original Articles:** Up to 5000 words or long enough to provide an adequate introduction (stating the objective of the study and why it is considered necessary), description of methods (including an outline on the treatment of the research animals and the number of animals used), and combined results/discussion section.

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